Chemical Week

June 2, 1951

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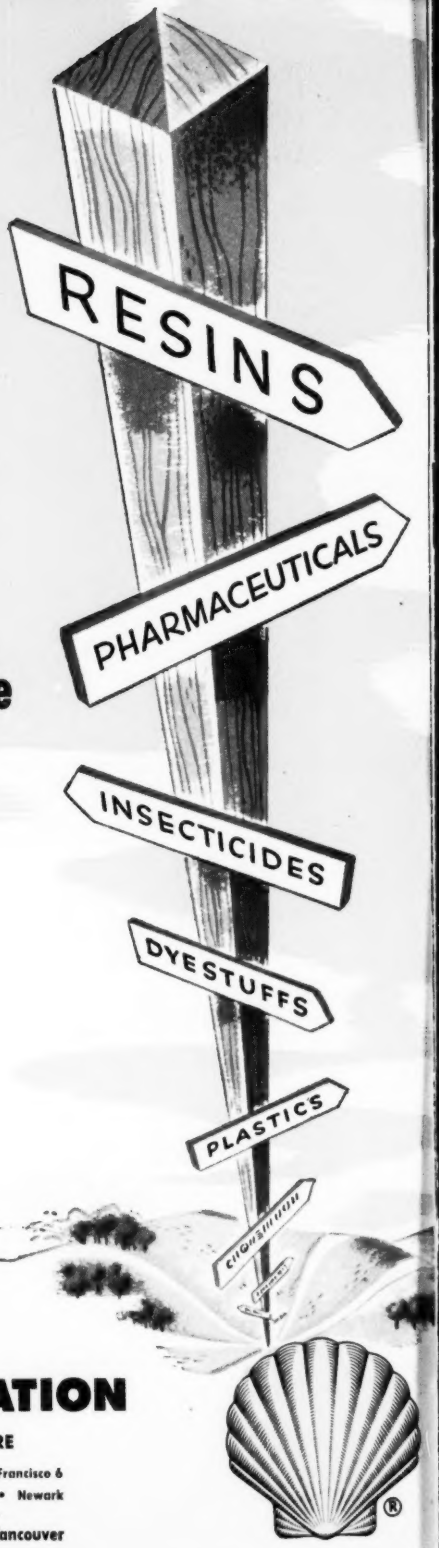

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June 2, 1951

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OPINION . . . . .

Right Plant, Wrong Color

To THE EDITOR: I enjoyed your recent news article on "Longer Haul for Oxygen" (May 12) . . . but I'm a little perplexed by one statement:

"Most significant development in the Air Reduction expansion is the fact that shipments from the new plant will be in liquid form—in tank wagons rather than in the familiar *green* cylinders. . . ."

Tsk! Tsk! Air Reduction's oxygen cylinders are *orange*, Linde's are *green*. . . .

A. MICHAUD,
Kellex Corp.,
New York, N. Y.

Banished, one color-blind editor.—ED.

Political Football

To THE EDITORS: Despite restrictions on paper supplies to newspapers and magazines in England, the Chemical Trade Journal (London) continues to devote a page or two of space each week to the sulphur shortage, which sometimes CTJ labels "The sulphur crisis."

I have just been doing some back reading . . . so that I would have a clearer mental picture of the way the sulphur shortage in England had suddenly become apparent . . . the arrival of the sulphur problem perhaps coinciding with the U.S. notice to Great Britain in December, 1950, that sulphur was going on allocation and that the amount allotted for the first quarter of 1951 would be 81,000 tons . . . although Great Britain had put in a request for 110,000 tons.

Going back over the story . . . particularly through various reports of House of Commons debates on raw material shortages, it would seem that the British Government had been advised two and a half years ago that the U. S. could not provide more sulphur than was needed for the sulphuric acid plants then in operation because the U. S. was worried about its sulphur reserves as a long-term problem. Judged from the House of Commons debates, the Government then placed a limit on additions of sulphur-using capacity, with the idea of forcing a switch to pyrites or other alternative sulphur sources.

It would appear that the Government's advice was not taken seriously . . . applications for the further building of sulphuric acid plants using elemental sulphur continued, although the debates do not indicate whether permission to build such plants was given.

One of the lady members of the Labor Party, a Mrs. E. White, had this to say about sulphur:

"I am not blaming private industry unduly, but they should not blame the Government because they were no more far sighted. I hope that if we are so unfortunate as not to be able to persuade our American friends to do what is obviously to the advantage of us all, we shall at least have the best possible information from the Government and the greatest possible measure of consultation with the workers' organizations."

From what Mrs. White said I would judge that sulphur has become a political matter . . . the Socialist Government is doing what it can to throw the onus . . . on the British chemical industry and the United States.

Along these lines, a Colonel Crosthwaite-Eyre asked Mr. Wilson, the then-President of the Board of Trade, if he could say what was the average American consumption per month and how much the U. S. above-ground stocks represented. Mr. Wilson replied . . . the American producers' stocks above ground represented something under a year's requirements. Actually, the above-ground stocks, at the time . . . represented about six months U. S. consumption exclusive of exports, a figure with which one suspects Mr. Wilson was familiar.

ECA came in for some condemnation on the ground that it had made no real effort to convert European industry from the use of American sulphur to sulphur from other sources.

This present week's mail from England brought in the April 21st issue of the weekly edition of the Daily Mail. The front page carries a three-column headline, "SOS for sulphur to save 50,000 jobs," from which I gather that sulphur continues to be politically important in Great Britain.

A. E. MARSHALL
Consulting Chemical Engineer
Providence, R. I.

"Allyeargies"

To THE EDITOR: The article on antihistamine drugs appearing in your March 31st issue has much to offer the organic chemist regarding synthetic and production methods evolved by the pharmaceutical field. Dr. Idson is to be congratulated for his fine presentation of the subject. . . .

One might only wish that more space had been utilized to further develop the described methods of preparing the antihistamines and their intermediates. For instance, it is not clear how benzyl pyridine could be obtained from . . . . . "2-picoline with either an aldehyde or chloride". . . .

. . . . . .

Also, I believe Dr. Idson meant the pyridyl analogue of α-methylbenzhydrol rather than α-methylbenzhydrol itself in referring to Decapryn . . . since Decapyryn contains no benzhydryl grouping.

Particularly informative, is the table on antihistamine preparations. After viewing the number of preparations, one might speculate that antihistamines are called for throughout the year: Winter, cold allergies; Spring, "rose fever"; Summer, poison ivy; and Fall, hay fever.

In other words, antihistamines for "allyeargies" might be the by-word. One doctor well-acquainted in the field has already mentioned the possible need for an anti-antihistamine.

CHARLES H. TILFORD
Department of Organic Chemistry
Research Laboratories
The Wm. S. Merrell Company
Cincinnati 15, Ohio

Tongue-in-cheek Reader Tilford has spotted a couple of typographical slips. The "2-picoline . . . "should have read: "or oxidation of 2-picoline and treatment with an aldehyde." The correct pyridyl phrasing: "the pyridyl analogue of a-methyl benzhydrol as in Decapryn."

Both the American Medical Association and the Federal Trade Commission would probably agree with Dr. Tilford on his anti-antihistamine suggestion—a product to combat the undesirable side-effects of some antihistamines.—ED.

Accurate Picture

To THE EDITORS: I have just studied the article by Dr. Idson on Antihistamines. He is probably the best informed man on this subject and I agree with his discussion in all phases that I feel competent to judge . . .

Articles such as his are of considerable value in that they present an accurate picture in a given field . . . both from the standpoint of research and production . . .

H. E. UNGNADE
Dept. of Chemistry,
New Mexico, Highlands University,
Las Vegas, Nev.

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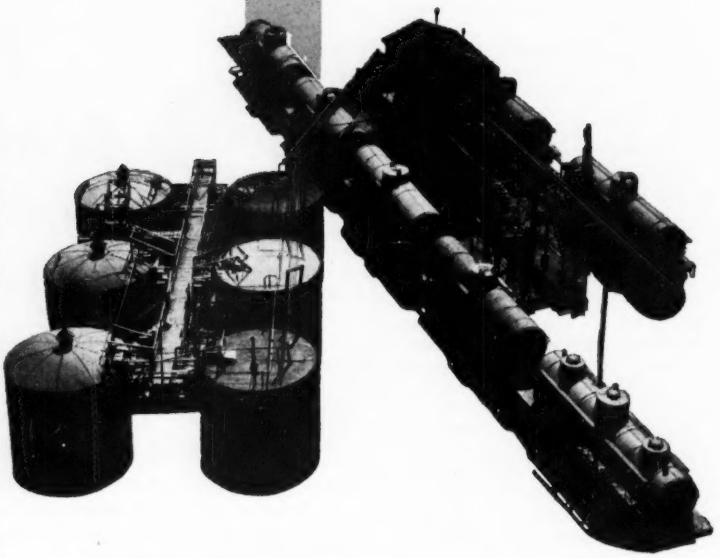

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CHEMICALS

NEWSLETTER

A last-minute reprieve by the Office of Price Stabilization gave the chemical industry until July 2 (shoved ahead from May 28) to comply with the new pricing regulation.

It is interesting to speculate upon what OPS will do with the 300,000 pricing schedules it expects to receive from all segments of the chemical industry; the department responsible for their processing reportedly has only 30 employees—file clerks and all.

Don't bet your shirt on it, but a persistent Washington rumor has it that the chemical industry will be freed from price control around September. Reason: too difficult to apply reasonably and fairly.

Some of the difficulties brought out in industry-OPS talks: Alkali-chlorine makers insist that theirs is an extractive industry, and as such should come under the general ceiling price regulation. But OPS has put them with other chemical makers under CPR-22.

What's a chemical and what's a drug? OPS wishes it could tell, since "chemicals" are under CPR-22 and "drugs" under GCPR. Industry has rightly pointed out that the line of demarcation is hazy—and so, as a result, is OPS.

Another chemical group that wants to get out from under CPR-22 is the dyes and intermediates industry. The Synthetic Organic Chemical Manufacturers Association, which represents makers of 90% of the output, is asking its members to supply OPS with data on which a "tailored price regulation" can be based.

Engineering societies as well as industry are alarmed over a provision of the pending Congressional draft bill: The provision would extend top age for possible draft call to 35 for men who receive occupational deferments. Top induction age for all others is 26.

Such a penalty on essential men will effectively eliminate deferments; few young men will choose to be deferred and thus extend for nine years their liability for military service, says the Engineers Joint Council, and employers could not conscientiously ask their deferment, under those conditions, without their consent.

This provision—already agreed to by a joint House-Senate committee—will further shorten an already alarming shortage (see p. 9) of technical manpower.

Ownership changes made news this week: Novadel-Agene Corp. (Belleville, N. J.) purchased a majority of W. C. Hardesty Co.'s common stock. Novadel-Agene is in the flour-bleaching and plastics fields; Hardesty makes fatty acids and plasticizers.

Late this month stockholders of International Minerals & Chemical Corp. will vote on the proposed purchase of Innis, Speiden & Co. Purchase price: over $2 million (by issuance of 76,648 shares of IM&C common). IM & C will get an improved position in potash chemicals and a sizeable chlorine capacity by the purchase. An IM & C proposal to issue 500,000 more shares of common points to additional similar deals.

Petrochemicals continue to occupy the spotlight as expansions and new ventures make news:

American Petrochemical Corp. is a new name on the scene. It is a jointly-owned subsidiary of Cities Service Co. and Firestone Tire & Rubber Co. Plans call for a large plant—possibly at Lake Charles, La., where Cities Service owns a 160,000-bbl. refinery.

Envisioned fields of activity include plastics, synthetic rubber, lube oil additives, cracking catalysts and glycol.

Shell's second benzene-from-petroleum plant will be in production early next year. Construction is now under way at Deer Park, Texas.

Look for more production soon of ammonia and titanium metal:

News of a new ammonia plant in Mississippi will be forthcoming in about two months. Producer: a firm already prominent in the synthetic ammonia field.

A ton of titanium per week is the scheduled output of Crane Co.'s titanium reduction pilot plant now under construction at the company's Chicago works. Operation is slated to start the middle of this month.

Main objectives of the pilot plant and accompanying research are cost reduction, increased yield, improved time cycle, and expansion of uses. A prime project is study of alloys of titanium with chromium, manganese, aluminum and other metals.

Process used by Crane is an improved modification of the U. S. Bureau of Mines' Kroll process.

Carbide & Carbon's Crag Herbicide No. 1 has received label approval for commercial use on strawberries, and eager growers have already snatched the small supply available.

The company also has label approval for experimental use only on sugar cane, asparagus, field and sweet corn. Good results obtained so far have prompted company officials to discuss construction of a commercial plant, but decision will probably be withheld until this season's results are in.

Commercial formulation contains 90% active ingredient: sodium 2,4-dichlorophenoxyethyl sulfate. It is sprayed at a minimum rate of 40 gallons per acre, using (per hundred gallons of water) 1½-2 pounds for light soil, 2-2½ pounds for medium soil, 2½-3 pounds for heavy soil.

Attempt by the Office of Technical Services to win a $300,000 appropriation and become a statutory (i.e., permanent) division of the Department of Commerce is drawing fire from private industry. The National Association of Manufacturers contends that OTS's plans are an unnecessary threat to industrial research.

OTS is currently trying to set up a parley among Atlantic Pact nations to work out international control of patents arising from governmental research activities.

Hollywood and the sulfur shortage seem poles apart, but a current situation in England shows how far-reaching a chemical shortage can be: Hollywood ships only one film negative, and British distributors make extra prints. But the shortage of sulfur and sulfuric acid has cut production of photographic chemicals, and film men are scouring the Continent for imports—usually at double the going domestic price.

. . . The Editors

We Mobilize for Freedom

WHY Controls are Necessary

One of the encouraging characteristics of the American people is their dislike for government controls. This augurs well for the future of their economic and political freedom.

But for the next few years we must not only tolerate but also help to make effective a whole battery of emergency government controls over our economic life. If we fail to do this now the future of that freedom we cherish will be imperilled. It is the purpose of this editorial—the third in a special series—to explain in simple terms why this is so.

After our military victory in World War II, we rushed through a demobilization which cut our military strength to about one-tenth of its wartime peak. Our allies did much the same thing. But the Russians maintained much of their wartime military strength and built up that of their satellites. With prodigious speed we switched from military to civilian production and went on to enjoy a rousing postwar boom—the greatest in our history.

This boom was in vigorous progress when, on June 25 last year, the Russian-sponsored North Korean army attacked South Korea. Our industrial production was rolling along at almost twice its prewar level. We had labor shortages in many key industrial areas. Under the impact of heavy buying all along the line, prices were climbing.

When the North Koreans smashed into South Korea they smashed into our national consciousness this fact: if we want a fair chance to save our national freedom from destruction by Communist aggression, we must race to restore some of the military power we had so speedily written off after World War II. And we must do it with our resources already very fully occupied with a boom in civilian business.

Program Small Compared to World War II

Compared with our military effort in World War II, the mobilization on which we are now embarked is small. At its peak, under present schedules, it will absorb no more than one-fifth of the total national production. During World War II we reached a point when nearly half of our total production went for war-making.

Moreover, our economy now is much bigger and stronger than it was in World War II. During the last decade there has been an increase of about 15 percent in our labor force. Our workers have had the training advantage of steady employment. The capacity of our industrial establishment is two-thirds again as great as it was ten years ago. Since the war no less than $70 billion has been spent to expand and modernize it.

Given time, the industrial giant we have created could pick up in its stride the added load of production for defense that now is con-

templated. But speed is of the very essence. There is little dissent from the proposition that if we are to stand off Russian aggression successfully we have, at the outside, two years in which to get ready.

Controls Needed to Prevent Chaos

These two facts – (1) the necessity for speed in our rearmament program and (2) an economy already stretched taut by a record civilian boom—create the general necessity for government controls. If we simply pile the billions of added defense expenditures authorized since last June on top of the civilian boom, and let it go at that, two destructive developments would follow. There would be a scramble for scarce materials, notably metals, which would create chaos in those markets. And prices would go through the roof.

Our situation during this mobilization is radically different from what it was when we rushed to get ready for World War II. Then we started with an economy that was coming out of a long depression. There was plenty of slack. Even in mid-1941 we still had over 6 million unemployed. Thus it was possible for us to expand war production greatly and also increase civilian living standards before the limits of our productive capacity made extensive controls necessary. But as we begin this new mobilization we find our economy already operating virtually at capacity. This fact is of key importance in understanding why this relatively small defense program so quickly requires the imposition of controls.

The selection and administration of controls thus far has been badly bungled. The threat of price controls, for example, was broadcast so vigorously and for so long that our people were virtually asked to raise prices and thereby do much to defeat the controls. Adequate taxation directed so as to attack inflation at the source and thus give direct price control a chance to operate has not yet been provided.

Indeed, we could readily assemble a long and devastating catalog of the deficiencies of the government's control program. But that would not dispose of the necessity for controls – by priority, by allocation, and, as a stop-gap, by direct prescription of selling prices – if we are to carry out our mobilization successfully. That is the only means by which a clear right of way for defense production can be cut through the highways of trade and commerce now jammed with civilian boom business.

Hope In The Wilson Plan

Since he became Director of Mobilization, Charles E. Wilson has added a new element of order and hopefulness to the mobilization program. He has laid out a plan which, if we are spared all-out war, would do three things by 1953. First, it would produce the weapons needed by our army and our allies to meet an immediate threat. Second, it would create the capacity that would enable us to move at high speed into weapons production for all-out war – if necessary. Third, it would create the additional production capacity that would restore by that date our ability to resume the climb of the American civilian standard of living.

In technical and industrial terms the Wilson Plan seems to be feasible. If it is successfully carried out, we should be able to begin getting rid of controls rapidly by 1953. But to carry out the program successfully, it must now have vigorous support from everyone. That does not mean mere agreement that it is a good plan. It means that we must conform to the controls that are necessary to make the plan work. In developing this support, the business community is in position to exercise crucially important leadership.

As has often happened in our national history, we are confronted by a paradox. We must accept emergency controls for the time being to insure survival of the freedom that they infringe. But, as we do this, we may find some comfort in the reflection that while controls from Washington are hateful, controls from Moscow would be infinitely worse.

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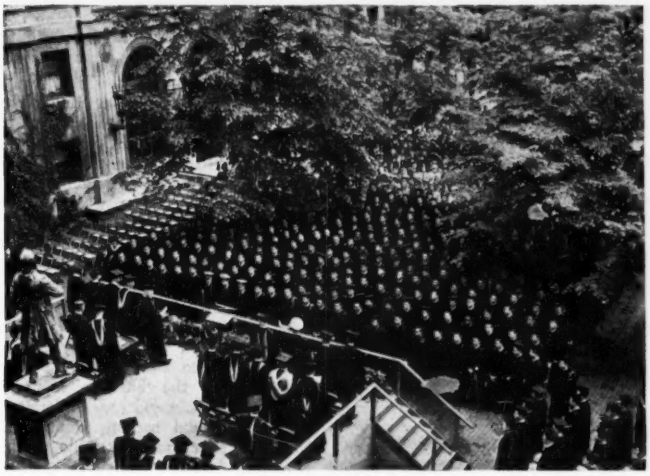
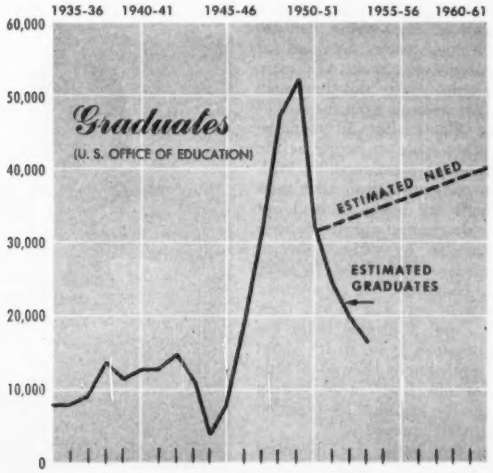
BUSINESS & INDUSTRY . . . . .



Market for Mortarboards

Lack of sufficient technical graduates makes most chemical companies fall short of '51 recruiting goals by 10-25 per cent.

CW survey finds starting salaries at all-time highs; personnel chiefs gloomy about any easing of situation.



SUPPLY AND DEMAND: There just won't be enough technical graduates to go around.

"It's tough now. . . . but its going to get a lot tougher the next few years." This was the lugubrious but unanimous opinion of the technical manpower shortage as expressed by the personnel directors of major chemical companies throughout the nation this week.

Much of the gloom, a nation-wide survey by CHEMICAL WEEK revealed, was due to the fact that although starting salaries have soared to all-time highs, most companies find themselves 10 to 25 per cent under their recruiting goals in this month of commencements.

Supply and Demand: Surprisingly enough, preëmption by the draft for military service is usually listed as the second or third most contributory reason for the shortage. Almost without exception, the top gripe is against the law of supply and demand: There just aren't enough technical graduates available to meet the needs of the rapidly expanding chemical industry.

Statistics on the subject offer no ray of hope. Estimates show that the annual harvest of engineering graduates will continue to shrink during the next three years. This month the nation's campuses will yield only about 32,000 engineers of all types (half of which will face immediate military careers). The 1952 crop promises about 26,000; in 1953 it will be 20,000; and in 1954, only 17,000.

The picture for the recruiting of chemists is equally dour. But most companies are more alarmed about the shortage of chemical engineers—needed to design and operate expanded production facilities. For this same reason they are distraught over the lack of mechanical engineers, civil engineers and engineering draftsmen who are needed—and quickly—to build the necessary plants.

Basic Causes: Personnel directors contend that the current shortage has been a long time in the making. Several social and economic trends have contributed to it. Says T. J. Kiernan, supervisor of personnel at U.S. Rubber Company: "You can trace the roots of this shortage back to 1930 when the depression cut into the marriage rate and therefore the birth rate. As a result, our current engineering enrollments are suffering. Engineering enrollments during the early 'forties

suffered because of World War II . . . and many of those students who returned to college on the G.I. Bill chose general courses. Since they were older, had more responsibilities, and often worked part-time, they didn't have time to devote to a technical education."

Another Reason: A chemical company personnel director adds another reason for the shortage: "Returning G.I.'s were told that engineers would soon be a dime-a-dozen drug on the market. 'Be smart, go into business or law school,' was the advice they received from ill-advised friends, relatives, and in some cases educators." Those who ignored this advice, he continued, are now in the enviable position of being able to "shop" for a job and a salary . . . and shopping is just what they're doing.

Going Prices: CHEMICAL WEEK's survey shows that holders of bachelor's degrees (in engineering or chemistry) are now being offered starting salaries in the range of $275-$325 per month. Holders of master's degrees are being offered $325-$380, and brand new Ph.D.'s are being tempted by $450-$500 stipends. Industrial recruiters also admit that in most cases the starting salary must fall on the high side of a range before the candidate for the job will show any sign of having normal hearing.

There are many other signs of the "sellers' market" in technical men. One of these is the reluctance of job-seekers to work in plants or laboratories remote from their home town. Another is the fact that, more than ever before, personnel directors are being asked to blueprint and forecast the probable futures that candidates will have with the company.

Small Companies: Companies employing 300 or more on their technical staff are usually in the business of producing basic chemicals and therefore in a better position to offer career security in these emergency times. Many smaller companies, however, are having a tough time competing for technical talent on this basis. Usually, they must offer larger financial inducements or some other arrangement to entice the elusive technical graduate.

Government: Technical agencies of the government are in a somewhat similar predicament. They usually can offer the career security but not the financial reward of the large industrial firms.

George Porter, director of personnel for the Bureau of Standards points out "We [B of S] are competing not only with industry but with other government agencies." He also explains that industry can usually outbid him by several hundred dollars . . . which doesn't make his job of recruiting 350 technical men one bit easier.

Other Government agencies reporting difficulty in competing on the open market for technical men include the Chemical Corps, the Division of Water Pollution Control of the U.S. Public Health Service and the U.S. Civil Service Commission.

Only the Atomic Energy Commission seems happy. Said its personnel chief, Fletcher C. Waller, this week: "The AEC has not experienced extraordinary difficulty in recruiting chemical engineers. Solicited referrals from deans of engineering colleges have given good results. Demand for chemical engineers among AEC contractors is quite steady and they seem happy to get referrals from the AEC."

Defense Plants: But all managements are not quite so happy as the AEC contractors mentioned by Waller. Many companies wail that their regular staffs are being thinned out in order to design and operate defense plants requested by various government agencies. One irate industry spokesman charged: "The government makes us milk our staff to run their plants . . . and it usually takes the cream of our men to do it. It's about time the government showed a little concern for our problem of getting and keeping the technical men needed to run our basic operations."

And so the battle for technical graduates goes on . . . and will continue to go on. The mortarboard wearer is having his day.

Portable Filter

A small gadget (weighs less than 12 lbs., occupies less than a cu. ft.) and a common chemical may be the answer to a quick, pure water supply for isolated troops. The gadget: a metal filter; the chemical: colloidal carbon, containing traces of silver and an insoluble alkali peroxide.

The new unit (known as S-filter or "Emergency Treatment Unit") was recently demonstrated at Randolph field by its inventor, Alexander Goetz.* Goetz drew a 5-gal. pail of raw sewage—with a bacteria count of 2½ million per cc.—from the Randolph outfall sewage line. The water, after passing through the filter, came out pure and sterile. In another field test, stagnant creek water was purified and drunk by a group of Air Force officers.

Operation: Without further treatment, the apparatus can supply from 50 to 100 men with sanitary water inside of 15 to 20 minutes. As the water enters the filter, a strainer catches the algae and coarser foreign matter; colloidal carbon, containing traces of silver and insoluble alkali peroxide, does the rest.

Placed on the filter, the powdered carbon forms a cake on contact with the water. The cake renders all the foreign matter inert, filters some of it. And even though a good portion of the bacterial population remains in the water after filtration, it is no longer harmful. The new filter, light weight and efficient, will receive a warm welcome from thirsty troops.

* Professor of physics and physical chemistry at California Institute of Technology.

ALEXANDER GOETZ: Portable filter, potable water.

BERKSON AND POTOMAC: "Glass houses" provide resin market.

Glass-Resin Windows

Fiberglas-polyester resin laminates are moving into uses formerly preempted by window glass: skylights, quonset-type building windows, office building partitions, greenhouses, and decorative materials. Alsynite Co., of America, San Diego, Calif., is the largest maker, and another, Corrulux, Houston, Texas, is moving in. Manufacturers of polyester laminating resins were rubbing their hands this week in happy anticipation of Alsynite Co. of America's third plant to produce structural Fiberglas laminates.

Alsynite started making the material at San Diego in 1947; a year ago capacity was 50,000 sq. ft. a month; and today it is 400,000 sq. ft. A new branch plant at Portsmouth, Ohio, will turn out twice that much, and a third plant is planned for the South. A site will be selected this year, and company officials envision a capacity equal to that of the Portsmouth installation. That all adds up to a thumping 2 million sq. ft.-per-month total.

Versatile: The material is translucent and is made in various colors: green, rose, blue, and maize, as well as opalescent white. The sheets are handled in much the same way as standard wallboard and come in standard corrugated and flat sizes. Curved sheets in standard lengths and radii are for use in quonset buildings.

Experiments were started soon after World War II. George Gordon, Alsynite research and development engineer, was one of the developers of the product with his brother, Donald, and George Baker. Louis Potomac is president of the company, and John Berkson is executive vice-president.

Development problems, according to Gordon, were concerned with choice of catalyst to cure the resin. Erratic results were overcome by the process of elimination. Other problems that were solved: incomplete impregnation, air bubbles.

University of California is carrying on experiments at the Santa Barbara Botanic Garden on the advantages of Alsynite for greenhouses and already has returned favorable reports. It is also using Alsynite in place of windows at its atomic radiation laboratories because of its shatterproofness. A number of school buildings and other structures have used the new material for windows.

Military Takes Most: However, just as Alsynite overcame the problems which had caused a high percentage of factory rejects and was ready to go into full commercial promotion, military demand stepped in and took most of the output for its quonset buildings, airplane hangar doors, and similar purposes.

Whether for military uses now or peacetime uses later, Alsynite offers a new concept in building lighting and decorating. Because it can be sawed, nailed or glued, it can be installed at a cost said to be about one-third less than glass. It also stays clean longer, and, because it is shatterproof, has a longer life where windows might be targets for balls, stones, or hail storms. Weight is approximately 8 oz. per sq. ft.; thickness, .050 in.; tensile strength, 15,000 to 16,000 psi; and ultimate flexure strength, 24,000 to 27,000 psi.

Another Under Wraps: In its development work, the company also uncovered another reinforced plastic product which will be entirely for military use and is of a classified nature. As soon as raw materials are available, this new product will go into production and will virtually equal the production rate of Alsynite as planned at all plants by the end of this year.

New ACTH Source

Armour and Company of Chicago will soon tap new sources of livestock raw materials in the Argentine. Large quantities of fresh pancreas and pituitary are available for production of insulin, trypsin and ACTH. A four-story building has been completed and is now being fitted with North American machinery. The nucleus of a technical staff is being recruited in Chicago to train Argentine personnel in a brand-new U. S.-equipped plant.

Argentine requirements for the three drugs, estimated at about 20% of capacity, will be satisfied first; the remaining 80% will be available for world-wide distribution. Recalling the early war years when many European diabetics died for lack of insulin (after bombings destroyed manufacturing and refrigeration facilities), representatives of Norway, Denmark, Germany, Switzerland, and Belgium have already put in their orders.

World consumption of insulin has been doubling every six years. Consciousness of diabetes and better detection methods are daily uncovering scores of additional, previously unsuspected cases. Loss of raw materials as a result of black market meat operations would be much more serious today than in 1946, when diversion from legitimate meat packers threatened a critical insulin shortage. Present insulin demands are almost twice as high. Aside from insulin, Armour's Argentine development anticipates an increased call for ACTH and trypsin from civilian and military physicians.

The new subsidiary will be known as Laboratories Armour de Argentina, S. A. It will be headed up by Armour's S. B. Bradshaw.

CHEMICAL COMPANY EARNINGS — 1st QUARTER 1951

	SALES		EARNINGS BEFORE TAXES		TAXES				NET INCOME	
	1951	1950	1951	1950	1951	Rate	1950	Rate	1951	1950
Air Reduction Co.	$ 28,207	$ 22,052	$ 4,746	$ 2,800	$ 2,866	60.4%	$ 1,045	37.3%	$ [a]1,880	$ 1,755
Allied Chemical & Dye Corp.	124,847	90,917	29,181	15,192	18,138	62.2%	6,774	44.6%	11,043	8,417
American Agricultural Chemical Co.[1]			2,666	1,821	1,500	56.3%	655	36.0%	1,106	1,166
American Cyanamid Co.	102,193	72,725	25,036	14,184	15,560	61.9%	7,300	51.5%	9,536	6,884
Atlas Powder Co.	12,440	8,367	1,479	620	943	63.8%	220	35.5%	536	400
Commercial Solvents Corp.	15,966	6,896	3,957	1,011	2,339	59.1%	336	33.2%	1,618	675
Davison Chemical Corp.[1]	12,915	10,608							841	605
Dow Chemical Co[2]	86,565	53,075	27,160	12,318	18,196	67.0%	4,780	38.8%	8,964	7,548
E. I. du Pont de Nemours Co., Inc.[d]	380,591	267,620	123,185	70,846	83,360	67.7%	31,530	45.0%	39,825	39,316
Hercules Powder Co.	58,881	34,206	11,110	4,606	7,116	64.1%	1,812	44.5%	3,994	2,795
Heyden Chemical Corp.	7,716	6,571	1,854	711	1,094	59.0%	292	41.1%	760	419
Hooker Electrochemical Co.[2]	9,793	5,984	2,699	1,268					1,024	783
International Minerals & Chemical Corp.[1]	21,443	19,186							2,265	2,400
Mathieson Chemical Corp.			6,567	3,456	3,660	55.7%	1,255	36.3%	2,907	3,458
Monsanto Chemical Co.	67,937	49,184							6,214	5,522
National Cylinder Gas Co.									667	565
Nopco Chemical Co., Inc.	6,645	4,212	1,209	392	765	63.3%	140	35.7%	444	202
Newport Industries, Inc.	6,497	3,591							624	208
Pennsylvania Salt Manufacturing Co.	12,433	9,009							1,301	941
Chas. Pfizer & Co., Inc.	23,237	12,155	10,290	3,194	6,854	66.6%	1,350	42.3%	3,436	1,845
Pittsburgh Coke & Chemical Co.									854	371
Rohm & Haas	29,575	18,143	6,951	2,878	[e]4,932	[e]71.0%	1,166	40.1%	2,019	1,712
Union Carbide & Carbon Corp.	224,787	159,696	70,567	44,822	41,388	58.6%	17,415	38.9%	29,179	27,407
U. S. Industrial Chemicals, Inc.[4]	18,896	10,619	3,325	413	[b]2,815	[b]85.0%	135	32.7%	510	278
Victor Chemical Works	8,497	8,413	2,173	1,647	1,398	64.3%	839	50.9%	775	809
Virginia-Carolina Chemical Corp.[1]	28,503	22,165	4,733	2,179	2,558	54.0%	838	38.5%	2,175	1,342
Total	$1,288,564	$895,394	$338,888	$184,358	$215,422	63.6%	$77,882	42.2%	$134,497	$117,823
% change 1951 over 1950	+43.9%		+74.4%						+14.2%	

[1] Third quarter in fiscal year ending June 30.
[2] Third quarter in fiscal year ending May 31.
[3] First quarter in fiscal year ending November 30.
[4] Third quarter in fiscal year ending March 31.
[d] Does not include net dividend income of $19,732,636 in 1951 and $15,194,264 in 1950.
[e] Does not include net non-recurring income of $494,703.
[a] Also includes unstated provision for possible renegotiation.
[b] Includes $900,000 EPT, covering the nine months to December 31, 1950.

Profits Up Despite Taxes

A neat 14% increase in net income was scored in the first quarter of 1951 by chemical producers despite a 200% tax jump.

Expansion of chemical plant continues at a rapid pace despite raw material shortages and higher construction costs.

The industry was almost solidly in the excess profits brackets paying the 62% maximum required by law.

Despite bruises inflicted upon chemical production schedules by raw material shortages and the buffeting of income by materially higher taxes, the chemical industry gave a good account of itself in the first quarter of 1951.

In the fall of 1950, when the question of excess profits taxes was getting beyond the "we-hope-it-won't-be-necessary" stage, Wall Street became lachrymose over 1951 prospects particularly for such outstanding growth companies as Dow, Rohm & Haas, and American Cyanamid. However, accompanying table shows that there was no cause for alarm. The 62% tax ceiling, written into the final bill, proved to be a boon to a surprising number of companies.

The full impact of accelerated depreciation charges for "certificate" facilities has not been felt in income accounts, but the chemical industry is nevertheless faring fairly well under the burden of excess profits taxes. Sales have gained, pre-tax profits burgeoned, and taxes have soared. While the gain in final net income was soberingly small in the initial three months of 1951 in comparison with other ratios, a sizable gain is still there. And, in many cases, fundamental earnings growth is concealed though paid-for costs incurred in the introduction of new products and expansion in plants that will be ready and waiting for a return to any reasonable facsimile of normalcy. There are also some hidden potential ulcers, such as the increase in caustic soda capacity. Most of this is now saleable, but may well plague the electrolytic producers in peacetime, even though demand for chlorine stays at a satisfactory level.

First Quarter, 1951: In an appraisal of the first three months of 1951 (or comparable months for the fiscal-year companies), several items stand out. Sales of the 26 companies included in the tabulation increased 44% over the comparable quarter of 1950. Higher operating rates, better prices, and the

additional benefits obtained from plant modernization, were reflected in an 85% increase in profits before taxes for the 16 companies on which data are available. Then came taxes—nearly 63.8% of taxable earnings against a 42.4% rate in the comparable 1950 quarter.

Or, to put it another way, among the 16 companies in the group of 26 which reported tax figures, income taxes swallowed 18.2¢ out of each sales dollar, against 9.5¢ in the previous year.

Although relatively little increase was left out of the soaring pretax earnings, net income was up in every case where adequate income statements were available for analysis. However, despite this the final gain in net income was slightly over $16.5 million. This figure bulks even larger when attention is directed to accelerated depreciation and amortization, stepped-up research and development outlays, and tax accrual above the 62% ceiling.

Still Expanding: Despite the fall-of-1950 worries and the impact of present taxes growth of the chemical industry continues.

Dow is an excellent example. Its expansion has been outstanding among the major companies. While its record has been one of daring-at-the-time expansions or entry into new fields, it has kept a weather eye on the balance sheet. It has shown concern for the market for its stock as well as for its proposed new products. A $100 million expansion program is in the works for the fiscal year ending May 31, 1952. There are reports, emanating from a high level, that $150 million in fiscal 1951-52 is a closer figure and is but part of a $700 million project, terminating in 1956-60.

While a clear statement from the Dow management may only come piece-meal from the annual reports, such a program is possible, although sales in 1950 were only $221 million and net plant stood at $211 million. Comparable figures in 1940 were $38 million and $30 million respectively.

Such growth is phenomenal, but it is still more or less characteristic of the fast-growing chemical industry.

•

For his development of techniques to produce polyethylene bottles, continuous extrusion of flexible polystyrene sheet, and extrusion in continuous lengths of cellulose plastics, James Bailey, Plax Corp. (Hartford, Conn.) was given 1950's Hyatt Award this week. Hercules Powder Co. sponsors the annual presentation.

EMPLOYEES COOPERATED in project which showed how . . .

"Tagged" Payroll Pays Off

The imaginative management of Cutter Laboratories was hard at work this week evaluating the results of a novel community relations experiment run off late last month. Specifically, officials of the California firm were tracing the course of almost 100,000 two-dollar bills with which the company met its April 27th payroll and paid its operating expenses during the last week in April.

For some time executives of Cutter Laboratories have been seeking some method of proving to themselves and their plant community of Berkeley, California, just how important their company's contribution is to the community's purchasing power. A way of doing this suggested itself in the form of a streamlined version of a plan that had been employed by some other industrial concerns. . . the use of traceable money. And, thought Cutter officials, what kind of currency could be more traceable than a two-dollar bill?

$2 Payday: As a result of this thinking, a fleet of armored cars pulled into the Cutter plant on the last Friday in April carrying 55,000 $2 bills for the payroll, and another 40,000 $2 bills to pay current operating expenses to individuals in the San Francisco Bay area. Cutter employees and suppliers were asked to cooperate with the plan by keeping the $2 bills going.

Banks, chain stores, local merchants and public utilities in the area were contacted and also requested to help and keep the bills on the move. Even the wives and families of Cutter breadwinners were asked to join in the project.

Results: The experiment was a success. . . but not in the way anticipated. The publicity reward of the venture was quite large. Local radio stations and newspapers found a lot of human interest material in the whole venture. But local merchants, who ran special $2 sales were disappointed. The expected rain of $2 bills turned out to be a drizzle. One local store-owner who offered two pairs of nylon stockings ($3 value) for $2 reported no takers and local banks and utility companies said that very few of the elusive "greenies" turned up.

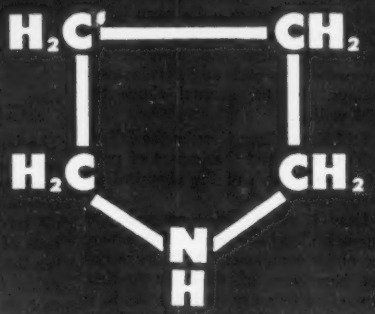
Explanation: Officials of Cutter and the Berkeley Chamber of Commerce were somewhat disappointed at the results. But hindsightwise, they admitted that Berkeley was perhaps too close to heavily populated San Francisco to make the experiment work dramatically. The Federal Reserve Bank in San Francisco reported that 10,000 of the bills turned up in its transactions after the first week.

But probably a bigger reason for the scattering of the bills was due to the fact that many of the Cutter employees live in nearby Oakland, Richmond, Alemeda and other small towns outside the area of the experiment. Bills spent in these municipalities were not counted in the final tally.

But successful or not, the project did prove that a little imagination can go a long way publicitywise. . . and anyway "it was a lot of fun."

AVAILABLE IN DEVELOPMENT QUANTITIES FROM DU PONT

PYRROLIDINE



PHYSICAL PROPERTIES

Appearance	Colorless, mobile liquid
Odor	Penetrating, amine-like
Molecular Weight	71.12
Freezing Point (Tech. Grade)	-63°C.
Boiling Point	86-87°C.
Specific Gravity, 20/4	0.8618
Index of Refraction, N20 D	1.4430
Flash Point (Tag Closed Cup)	3°C.
Solubility	Miscible with water and most organic solvents

In water forms base with dissociation constant of 1.3×10^{-3}.

This cyclic secondary amine is now being produced synthetically and is potentially available in commercial quantities. A wide variety of unusual compounds can be formed by reactions involving addition, condensation, acylation, and alkylation. Outstanding chemical properties include the following:

Moderately strong organic base. Solubilizer for acidic materials.

Functions as a catalyst and reaction medium for certain organic reactions.

Highly reactive, versatile chemical intermediate which may afford a practical way to make profitable products. For example:

- **With carbon disulfide, yields *rubber accelerators* similar to those obtained from piperidine.**
- **With alkyl halides, gives N-alkyl pyrrolidines which can be converted to quaternary bases of possible use as *sterilizers* and *surfactants*.**
- **Useful for introducing the pyrrolidyl ring, a *physiologically active nucleus* found in many natural products such as alkaloids.**
- **With ethylene oxide, gives an *alkanolamine*, N-hydroxyethyl pyrrolidine.**

A REQUEST *on your company letterhead will bring technical bulletins and price information. Just write to E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Field Research Section, Wilmington 98, Delaware.*

DU PONT ELECTROCHEMICALS

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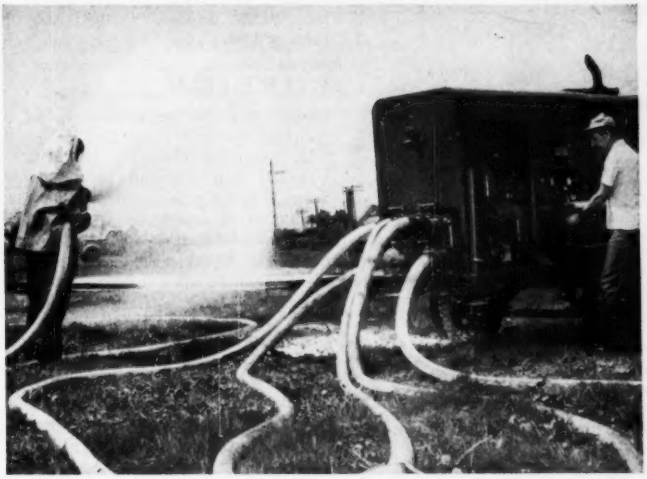


TESTS ON SMALL-SCALE FIRES lead to the Navy's improved system for . . .

Firefighting by Chemical Foam

Ten years of intensive research by Navy scientists have paid off in the form of new, improved systems of fighting fuel fires. It means the Navy now has what are probably the most efficient methods in the world for combatting gasoline or oil fires—either on land or at sea.

Key to the Navy's perfected firefighting system is mechanically produced foams of water, air and protein solutions. Using laboratory chemical and physical tests on thousands of small-scale fuel fires, scientists at the Naval Research Laboratory started out by vindicating a theory. They proved that the water in these foams puts out the fire by its cooling effect, and only then can a vapor-proof foam be laid down to prevent the fire from reigniting. They pin-pointed the chemical composition and water content of the foam through careful planning and tedious research.

The next step was designing equipment to put the foam to work. In cooperation with engineers of the Bureau of Ships, NRL has recently completed the redesigning of large-capacity piped foam systems aboard U.S. aircraft carriers.

For fighting oil and gasoline fires on land, the laboratory, in conjunction with industry members, has perfected an entirely new foam generating and pumping unit for the Bureau of Yards and Docks. It is the first motorized equipment to be engineered specifically for fighting only oil and gasoline fires. The triple pump unit is powered by a 200 hp motor and can deliver up to 2,000 gal. per minute of wet, fire-extinguishing foams at line pressures of 60 lbs. per sq. in.

The Navy apparatus is under keen observation by industrial companies—particularly in the chemical and petroleum field. They visualize the same equipment adapted for their own use to minimize damage from fuel fires.

Railway for Alcan

A railway line between Terrace and Kitimat, site of the Aluminum Co. of Canada's new refinery project, is being studied by Canadian National Railways.

CNR engineers are surveying the 40-mile route which was once explored by the old Grand Trunk Pacific, forerunner of CNR. When GTP originally pushed through to the Pacific, Kitimat was studied as an ocean port, but was dropped in favor of Prince Rupert.

The new rail line would link Kitimat with the main CNR Prince Rupert-to-Prince George tracks.

Work is continuing on the big Alcan project. A road running from Kemano at the southern end of Gardner Canal is now being pushed seven miles toward the powerhouse site ten miles up the Kemano River.

A road has been built from Vanderhoof to the Nechako Canyon.

Cresol from Toluene

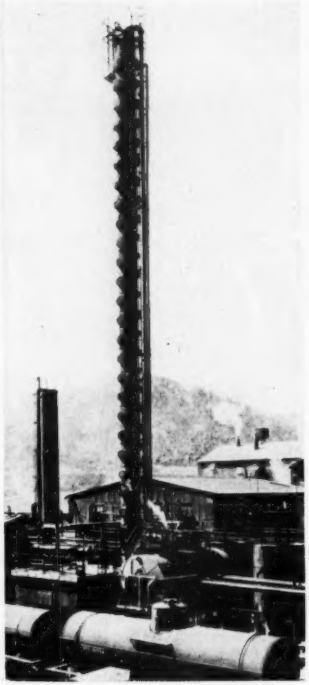
Big chemical company managements are eagerly watching progress made by small (total capital: less than $1 million) Hydrocarbon Chemicals, Inc. The reason is Hydrocarbon's exclusive process which will soon be turning out 10,000 lbs. per day of paracresol from toluene. The process has other also-interesting commercial applications, and the company plant can be expanded to accommodate them. Process key: a boron catalyst.

This week, Frank Andrews (president, Hydrocarbon Chemicals) is beaver-busy directing the renovation of a ramshackle plant in the Island District of Newark, N. J. The rejuvenation process is far from being complete, but already the plant is taking on some aspects of a modern production unit. Originally, operations were slated to get underway this month, delays in delivery of equipment caused a postponement, however, pushed starting date back to September.

Progress: HCI was formed specifically for the commercial exploitation of a process developed in the labs of United International Research, Inc. (*CI, Mar., 1949*). Andrews, heading a group of prospective investors, called in Columbia University's James Church to evaluate the process. Church not only liked what he found, he is now doing double-duty as college professor and HCI vice president.

After weathering the difficulties inherent in forming any new enterprise, Andrews acquired the present choice plant site in Newark. The plant is easily accessible by barge, steamer, or rail (it fronts on the Passaic River, is served by a private siding of the Central Railroad of New Jersey). Initial production will be confined to paracresol from toluene at the rate of 10,000 lbs. a day. However, the process can be adapted to other products—phenol, resorcinol, higher fatty alcohols are a few of the possibilities. Furthermore, the plant occupies only a small portion of the company's 3-acre site, leaving plenty of room either for additional facilities for cresol or for other products. But Andrews has his sights set on getting into production of cresol, says any expansion plans will have to await successful production of that compound.

Process: The discovery was one of those fortuitous research accidents, often talked about but seldom achieved. Workers, looking for a preparation of elemental boron, found organo-boron compounds with unusual properties. When it was found that one of them could be hydrolyzed to the corresponding alcohol, the boron objective was abandoned, work concentrated on the development of the present commercial process.



CRESOL FROM COAL TAR: A competitive process is in the offing.

In essence, the process consists of bubbling toluene vapors through a mixture of sulfuric acid and the boron catalyst. A complex compound of toluene and boron is formed, which is then hydrolyzed to the alcohol.

Outlook: The initial output of the synthetic cresol was contracted for some time ago; it will go chiefly for the production of germicidal insecticides. Andrews says he expects no raw material difficulties; he has assured sources of supply. A significant factor in the raw material picture: One interested purchaser—operating in the vicinity—is a big producer of sulfuric acid.

Economic aspects of the process are hard to measure at this point. Since purchasing the process from United, HCI has thrown a shroud of secrecy over it. Original estimates by United said the synthetic material could be sold 25% below the market price of the natural material derived from coal tar. But HCI, with guaranteed markets, is not disposed to talk about price or cost.

FOREIGN . . . . .

Japan: Japanese manufacturers of chemical fibers are seeking tie-ups with American concerns, for both technical and financial help. The Tokyo Rayon Co. is planning to boost production of Amilan by a technical pooling agreement with Du Pont.

The Dai Nippon Celluloid Co. and the Teikoku Rayon Co. are planning to establish a new Japanese-American Co. The organization will be jointly managed by American and Japanese, will produce estron with the financial aid of American Viscose. The American concern will submit its conditions to the two Japanese companies sometime this month.

The Asahi Chemical Co. also plans to get American technical aid. With know-how supplied by Dow, it will launch production in vinyl chlorides.

EXPANSION . . . .

Koppers: The company will construct 27 chemical recovery coke ovens. Work will be done for the Granite City (Ill.) Steel Co. at its plant there. Koppers will also improve chemical, benzol and coal handling facilities at the plant.

•

Phillips Chemical: The sulfur extraction plant to be built in West Texas (*CIW, Apr. 28*) will be located in the Permian Basin oil fields near Goldsmith. Output (about 100 long tons daily) will go to company's ammonium fertilizer plant at Adams Terminal, near Houston.

PEOPLE . . . . . .

Herbert B. Sliger: From assistant general sales manager to manager, purchasing department, Commercial Solvents.

Leland H. Burt: From supervisor, CMC development, to supervisor, Product Development, Hercules Powder.

Francis A. Wandell: From head of purchasing department, J. T. Baker, to assistant manager, International Department, Armour Laboratories.

John J. Powers: To member of the executive committee, Pfizer.

W. N. Williams: From vice president, production, to operating vice president, Westvaco Chemical Division.

ALROSOL

ALROSOL® is a highly concentrated nonionic fatty amide surface-active agent of unusual versatility.

Available as a free flowing light amber liquid, ALROSOL is miscible with most organic solvents and is readily solubilized in mineral oil or kerosene. It is also miscible with water, passing through a gel phase on dilution; it is soluble in hot water. Although a powerful surface tension depressant in salt brines, ALROSOL must be used with coupling agents to produce clear solutions above 0.5% concentration in the presence of electrolyte. ALROSOL is relatively stable in mild acid or alkali and may be used with peroxide; it is compatible with cationic and anionic surface-active agents (including soap). ALROSOL is non-irritant to the skin and has a low level of toxicity; it is non-germicidal.

WETTING REWETTING PENETRATING — At 50°C, ALROSOL wets out cotton skeins (Draves' test) in 16 secs. at 0.05%. Wetting is not significantly affected by water hardness, organic or mineral acid, salt or alkali to 1% concentration. ALROSOL has good spreading and wetting properties on metal surfaces. Rewetting properties are excellent, particularly at mildly acid pHs.

SOLUBILIZING EMULSIFYING — ALROSOL solubilizes essential oils, pine oil, keeps high titre soap in solution. It is recommended as an emulsifier for low viscosity liquids, its hydrophilic properties may be modified where necessary by addition of oleic acid, high molecular weight amines, esters, alcohols.

DETERGENCY — ALROSOL is an excellent grease emulsifier and solid soil suspending agent, suitable for use on hard surfaces and textiles; redeposition is relatively negligible. ALROSOL shows greatly improved detergent action when used with tripolyphosphate, pyrophosphate, carbonate and other alkalis.

SOFTENING LUBRICATING — Possessing very mildly cationic properties, ALROSOL is adsorbed somewhat on textiles and paper, imparting a soft hand and anti-static effect. Aqueous ALROSOL solutions have excellent lubricity.

FOAMING — ALROSOL shows enhanced foaming power at neutral and acid pHs, and in the presence of polyphosphates. It may be defoamed by high flash point dihexyl ether.

STABILIZER — ALROSOL improves foam viscosity and stability of other surface-active agents including quaternaries; it also increases shear resistance of latices and wax emulsions.

DISPERSING — ALROSOL disperses metal oxides and carbonates (titanium oxide, iron oxides, lime soaps), many dyestuffs, pigments in aqueous and non-aqueous media.

THICKENING — Water solutions of ALROSOL at 10% have a viscosity of more than 500 cps; 1-2% solutions are also viscous and thixotropic.

ANTI-CORROSIVE — ALROSOL retards corrosion of ferrous metals by some of the alkyl aryl sulfonates.

ANTI-DUSTING — Readily adsorbed on carbonates and other alkalis, ALROSOL prevents dusting without caking.

APPLICATIONS

COSMETICS . . . formulation of soap and synthetic shampoos . . . hair conditioners . . . low cloud point lauryl sulfate solutions . . . bath oils . . . better levelling hair dyes . . . solubilized perfumes . . . liquid make-up dispersions . . . better spreading shaving creams.

SOAPS . . . improving foaming, detergency, and hard water properties of liquid and stearate soaps . . . solubilizer for high titre acids and unsaponifiables in potash soaps . . . formulation of hard water bar soap.

DETERGENTS and SANITARY CHEMICALS . . . liquid detergents . . . formulation of hand cleaners, solvent and emulsion cleaners for metals, dry cleaning detergents and spotting compounds . . . detergent sanitizers (with quaternaries), emulsifier for phenolics . . . fruit washing compounds for removal of organic insecticides . . . rug and upholstery shampoos . . . varnish and paint removers . . . laundry detergents . . . tar removers.

TEXTILES . . . scouring agent for raw wool, worsteds, cottons . . . soaping prints, washing chenilles . . . bleaching . . . stripping vat colors . . . desizing assistant . . formulation of spinning oils and wool oils . . . rewetting agent in sanforizing . . . dyeing assistant with vats, indigoids, directs, sulfur and basic colors.

LEATHER . . . finishing and softening with oxalic and lactic acid, dispersing pigments and dyestuffs, levelling agent.

PAPER . . . on paper towelling, tissue for improved absorbency, softness and rewetting.

METALS . . . emulsion cleaning . . . formulation of buffing compositions, lubricants and cutting oils.

ALROSOL C

. . . 100% active liquid fatty amide nonionic soluble in water and in organic solvents. ALROSOL® C, unlike ALROSOL, does not gel on dilution with water; its solutions are clear, thin, slightly alkaline, and will tolerate electrolyte; it is, for example, a good foaming agent and penetrant in 20% magnesium chloride, 15% sodium hydroxide. ALROSOL C has poorly developed emulsifying properties as compared with ALROSOL, is equivalent as a penetrant and detergent, somewhat better as a solubilizing agent. ALROSOL C foams and lathers more copiously than ALROSOL, but may often be combined advantageously with ALROSOL for improved lather.

APPLICATIONS: as for ALROSOL, but recommended where better solubility and foaming properties are desired.

ALROSOL O

. . . 100% active fatty amide emulsifier available as an amber oil dispersible in water (forming gels at 15-60%), soluble in most organic solvents. Suggested applications . . . cutting oils, wool oils, fat liquoring and lubricants . . . dry cleaning soaps . . . mineral oil emulsions . . . silicone emulsions.

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PHARMACEUTICALS

PLASTICIZERS

TYPICAL REACTIONS OF VICTOR PHOSPHORUS CHLORIDES

$$3ROH + POCl_3 \longrightarrow R_3PO_4 + 3HCl$$

$$3R'OH + PCl_3 \longrightarrow R'_2HPO_3 + R'Cl + 2HCl$$

$$3ROH + Cl{-}\overset{\overset{S}{\|}}{\underset{Cl}{\underset{|}{P}}}{-}Cl \longrightarrow RO{-}\overset{\overset{S}{\|}}{\underset{O}{\underset{|}{P}}}{-}OR + 3HCl$$
$$\qquad\qquad\qquad\quad R$$

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What special problem do you have? What properties do you seek in a chemical? It may well be that a Victor phosphate, formate, oxalate, or one of the many derivatives of these versatile chemicals will provide the answer.

For example, the three important Victor phosphorus chlorides mentioned here have already extended their usefulness by solving specific problems in the production of pharmaceuticals, plasticizers, lacquers, and chemicals.

Bring your problem to Victor. We may already have the answer or be able to get it for you. There is no obligation for this "service to industry." For quotations, additional information, or experimental samples of Victor phosphorus oxychloride, phosphorus thiochloride, and phosphorus trichloride, write today . . . on your company letterhead.

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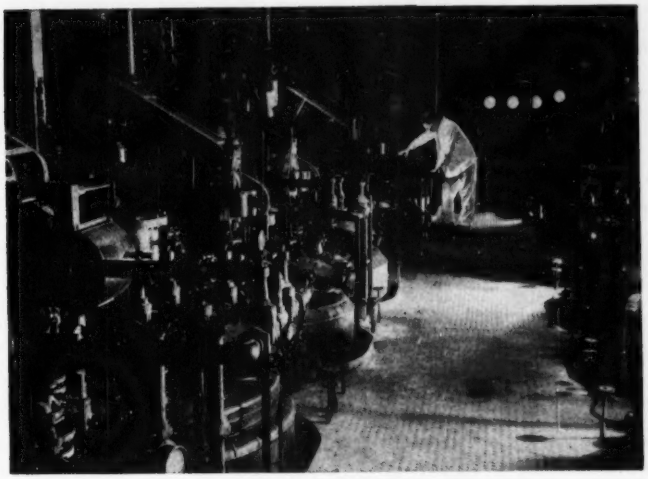

SALICYLATE REACTORS: Owners spot a threat.

Salicylate Competition

Gentisic acid, now commercially available, is the newest threat to the supremacy of the salicylates as anti-rheumatic drugs.

A remarkable absence of toxic effects is the compound's chief claim on a profitable pharmaceutical market.

Today's high price, based on limited output, will fall as demand materializes.

Salicylates, for years, have been the drugs of choice in the treatment of rheumatoid arthritis, rheumatic fever, and related afflictions. Their therapeutic value is indisputable. But discomforting—and often disabling—toxic side effects have been a standing invitation for safer replacements.

Gentisic acid is the current candidate for the job. If clinical results are any criterion, it has a better-than-average chance of success. The sodium salt, given to rheumatic fever sufferers in quantities comparable to salicylate dosage, apparently caused the disappearance of pain, swelling, and fever. Toxicity was lacking, except for one case of minor gastric disturbance. Rheumatoid arthritis patients benefited in like fashion.

Toxicity of the salicylates is a relatively minor consideration in small doses. An aspirin tablet is a pretty safe way to get at that occasional headache. But the high plasma salicylate levels called for in treating rheumatic diseases, often results in the variety of untoward symptoms covered by the catch-all term, "salicylism". Ill effects frequently are severe enough to rule out prolonged salicylate therapy. Gentisic—by virtue of its apparent harmless nature—may be just what the doctor needs for continued administration.

Many of the distressing salicylate after-effects are due to the formation of salicylic acid in the stomach and its subsequent absorption in the upper gastro-intestinal tract. Salicylic acid is oxidized, in the body, to gentisic. Researchers believe that the resultant gentisic acid gives relief by inhibiting the enzyme hyaluronidase—vital to normal function of the joints, but detrimental in excessive amounts.

Chemistry of this inhibition is not thoroughly understood. One theory postulates the formation of a semiquinone which condenses with the enzyme protein.

Mann Fine Chemicals, Inc., Hexagon Laboratories, Inc., and Fries Bros., Inc. account for the bulk of gentisic manufacture. It is also available from Panray Corp., R. W. Greef & Co., Inc., American Roland Corp., R. S. A. Corp., and others.

A commercial neophyte gentisic sells for about $8.50 a pound. The tab will be revised downward as demand picks up.

Watchful Waiting: Appearance of gentisic acid in clinical literature during the latter part of 1948 caused the first stir of genuine industrial interest. Therapeutic results were highly encouraging, and the pharmaceutical industry settled down to a period of watchful waiting. Finally, early in the following year, several outfits took the compound into the laboratory for a close look.

Synthesis—from salicylic acid—was ironed out, problems of stability solved. Technologically, everything was ready for the kick-off; psychologically, it was the worst possible time to introduce an anti-arthritis drug. Cortisone was in the limelight, anything else would have been anti-climax. Not eager to unveil the product in cortisone's shadow, Panray—for one—held off another year.

Today, gentisic acid is cutting its developmental baby teeth. Aside from purely therapeutic considerations, the material is being investigated in many chemical applications. Hoffmann-La Roche researchers, for example, have used the ethanolamide of gentisic acid to solubilize riboflavin.

Gentisic acid and salts, covered by FDA regulations dealing with new drugs, are available to the public on prescription only. Producers are now engaged in a campaign to alert doctors to the potentialities of the material.

•

Flame Proofers: Cellulosic textiles can be made flame-resistant with finely divided oxides of tin, titanium, antimony, or bismuth and a halogen-containing thermoplastic compound. Two patents issued to American Cyanamid describe these ingredients. In addition, the first formulation includes a water-soluble guandine salt of a phosphorus polyacid; the second, a soluble, metal-free, nitrogen-containing salt of an amino phosphoric acid.

•

PES Analysis: An improved analytical procedure out of General Foods Corp.'s Hoboken labs conveniently determines polyoxyethylene stearate in dilute solutions.

Method relies upon the formation of a complex between PES and the amylose starch fraction. Amylose itself, not involved in the complex, is free to form a colored iodine complex. Colorimetric procedure accurate down to 0.05% dissolved PES.

Plastic Progress

Massachusetts Institute of Technology plastic researchers report a new method of investigating physical changes produced by curing thermosetting resins. The technique promises better cure-control in commercial molding operations. Another phase of research has turned up interesting data on the effects of reorienting polystyrene.

Now six years old, the M.I.T. plastics program is sponsored by industry and coordinated through the Plastics Technical Subcommittee of the Manufacturing Chemists' Association. Prime objective is the development of fundamental data on the behavior of plastics under mechanical stress.

An important part of current research is devoted to curing phenomena. Using ultrasonics, M.I.T. workers discovered that transmission and absorption of sound waves by thermosetting resins varies with the degree of cure. By measuring velocity and intensity of transmission, secrets of the curing process can be adduced. Rate and extent, readily determinable by this technique, may easily be correlated with physical properties like hardness, flexural strength, etc.

It now seems likely that curing-induced alterations can be studied as functions of process variables—temperature, concentration, catalyst, etc. Equally important, the development could be the tip-off to better cure-control of thermosetting resins in commercial molding procedures.

Untangle for Results: Polystyrene section of the program has also proved fruitful. One outstanding result is an unusually flexible polystyrene produced by molecular reorientation. Researchers reasoned that the plastic owes its characteristic brittleness to the tangled state of the long-chain molecules.

If these chains could be combed out by some method, flexibility should take a turn for the better. The method was to stretch hot, plastic polystyrene; and the strategy happily produced the desired result. After cooling, the stretched pieces had about three times the tensile strength (in the direction of stretch) of unstretched material. Upon rupture, the separated surfaces of the oriented polystyrene were not shell-like, as is the case with normal polystyrene, but fibrous—like the ends of a pulled-apart string.

X-ray diffraction and birefringence of visible light showed only a low order of orientation in the stretched plastic. There was no evidence of crystalline areas.

This new knowledge, uncovered by the M.I.T. group, has already been put to practical use in the manufacture of flexible polystyrene sheets. Authorities in the field claim it also opens the door to a polystyrene fiber for certain special fabrics.

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New Alkyd: Plaskon Div., Libbey-Owens-Ford Glass Co. will soon introduce a new flame-resistant resin under the tag Plaskon alkyd 422. Comparable to the company's other alkyds, the new material retains its electrical properties in high humidity and temperature. Fast cure, high arc resistance, and dimensional stability are added features.

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Mixed Solvent: Soludiene, a solvent containing approximately 65% paraffins, 20% naphthenes, and 15% aromatics, can now be had in tank car and drum quantities. A product of Colonial Alloys Co., the solvent is intended for use in the formulation of resin surface coatings, paints, rubber, inks, cleaning fluids, polishes, and waxes.

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High-Pressure Fellowship: General Aniline & Film Corp. has established a fellowship at the University of Notre Dame for investigations in the synthesis and reaction of acetylene derivatives. One phase will augment GAF's work on polyvinyl pyrrolidone (PVP).

•

Rot-Proofer: Pennsylvania Salt Manufacturing Co. offers a new, water-soluble, powdered copper ammonium fluoride for evaluation as a termite and rot-proofing agent. Laboratory and field tests on a variety of woods highlight the compound's good penetration characteristics in dilute solution. After drying, wood treated with the copper ammonium fluoride complex, reportedly shows better bleaching resistance than samples treated with copper sulfate or zinc chloride. In practice, wood may be sprayed, soaked, brushed, or impregnated. Textile mildew-proofing is another suggested use.

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Opium Ouster: Methadone, a synthetic narcotic, is reported by the Army to be as effective as morphine, easier on the patient, and probably less habit-forming. Possibility: end of American dependence on foreign opium markets.

•

Copolymer Liner: New, high-strength, flexible copolymer film, developed by Protective Lining Corp., is slated for duty in bags and drum liners. Available without a DO.

Organic Get-Together: Denver, Colo., will be the scene for the Twelfth National Organic Chemistry Symposium. Opening June 12, the meeting, to last four days, will hear papers by leading American researchers. On the agenda: carbonium ions, steroid oxidation, organic sulfur compounds, o-phenylenediamines, pituitary hormones, and high-pressure hydrocarbon synthesis.

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Mouthful: Residents of the Richland, Wash., area, surrounding the Hanford atomic energy works, will soon learn that the installation constitutes no health hazard to its neighbors. Cooling water from atomic furnaces is thoroughly decontaminated before being pumped back into the Columbia River. According to General Electric researchers, one person would have to eat, at a single sitting, 100 pounds of salmon caught just below the Hanford works, to take into his body a noticeable amount of radioactive material.

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Polio Hope: Test tube experiments at the University of Michigan's School of Public Health show ethionine an effective polio virus inhibitor. The chemical was not harmful to human tissue cultures, but doctors are uncertain of its toxicity in large doses. Intensive animal evaluation will precede human tryouts.

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New Brominators: Monobromantin (3-bromo-5,5-dimethylhydantoin) and dibromantin (1,3-dibromo-5,5-dimethyldantoin), two new products of Arapahoe Chemicals, Inc., are available in pilot-plant quantities. Allylic, side-chain, and alpha ketonic brominations are their specialty. Commercial quantities will be quoted on request.

•

Electron Emitters: Metal borides are new materials found to be effective electron emitters. Having the general formula MB_6, the metal's crystal structure combines high electrical conductivity with high thermal and chemical stability. Fundamental feature of the boride emitters is the mechanism they provide for constantly maintaining an active cathode surface.

Lanthanum boride has given highest emission thus far—higher than normally obtained from thoria. General Electric researchers call it especially useful in applications requiring high current densities.

PICTURES IN THIS ISSUE

p. 10—School Aviation Medicine; p. 13—Elmer Moss; p. 15—U.S. Navy Photos; p. 28—Woro Studios; p. 37—Elwood M. Payne.

PRODUCTION . .

Regenerative Reform

Regenerative reforming of hydrocarbons will soon be carried out on a commercial scale. Koppers-Hasche furnaces are now being constructed for Rochester Gas and Electric Corp., Rochester, N. Y., to produce approximately a million cubic feet per day of fuel gas from various types of hydrocarbon feedstocks. Major advantage: a wide and controllable range of heating values in the product.

First commercial installation of Koppers-Hasche furnaces, by Rochester Gas and Electric Co., will represent the culmination of over two decades of research on adaptation of regenerative furnaces to hydrocarbon cracking. Their use was first proposed by Robert Wulff for the pyrolysis to acetylene. A. O. Smith Corp. also suggested this means for production of the reducing gases required to make sponge iron from iron ore. However, the Rochester installation will produce fuel gas instead by partial combustion of hydrocarbons.

Heat-And-Cool: Regenerative furnaces have been used by the steel industry for years to reduce fuel consumption in the operation of open-hearth furnaces. Briefly, regenerative furnaces consist of brick checkerwork which is heated by exiting hot gases. The incoming gases are in turn preheated by a second checkerwork which has been heated by the hot gases leaving the system. Thus by reversing the flow at regular intervals, heat is transferred from the exit gases to the incoming gas.

The unit under construction for Rochester Gas has been designed from data obtained by operating a 150,000 cubic feet-per-day pilot furnace at Watauga Valley Gas Co.'s gas plant, Johnson City, Tenn.

Continuous: The regenerative furnace can be operated without reversing if the heating value desired in the exit gas is between 900 and 1,000 BTU per cubic foot. Bur true regenerative (reversing flow) operation must be employed when the product must be high in hydrogen and carbon monoxide for lower BTU values.

Gas Manufacture: In starting up a cold furnace one burner is lighted, the checkers adjacent to the burner are heated to approximately 1500 F, and regular operation initiated after one hour. A mixture of hydrocarbon and air is fed through a three-way valve into one end of a regenerative mass where it is preheated to a point where partial combustion can take place in a chamber between the two regenerative masses. Product gases pass out through the second regenerative mass, giving up substantially all of their sensible heat and then exiting through a second three-way valve. Reversing the three-way valves at intervals reverses the direction of flow and changes the heating mass to the cooling mass and vice versa.

Low Cost: The largest potential use for the new furnace is to produce a gas which can interchange with natural gas in a city system. Very little investment and a minimum of maintenance is needed. It is automatic in operation, and the alumina refractory checkers do not spall or disintegrate at the low temperature (about 1,600 F) employed.

The product is clean—free from fume and tar. The small amount of formaldehyde produced can be removed by scrubbing with water. When comparing the heating value of the product with that of the feed, overall efficiency is 98%-99%.

•

Cheaper Hydrogen: Norsk Hydro is spending £1,000,000 to install a cheaper process for production of hydrogen for its nitrogen fixation plants. Norsk obtains hydrogen for ammonia synthesis by electrolysis, and the new method is reported to up the output of hydrogen per KWH by 25%. The new process is being installed at its synthetic ammonia plants at Glomsfjord and Heroya and will add about 9,000 long tons of fixed nitrogen per year to Norsk's production.

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Laboratory Ozonator: Testing the value of ozone in industrial processing will be greatly eased by a new and flexible ozonator for the laboratory. Maker: Ozone Processes Div. of Welsbach Corp.

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Permanent Magnet: The General Electric Research Laboratory has developed the world's most powerful permanent magnet. The cobalt-platinum alloy which is used is 24 times as powerful in small sizes as Alnico-5, currently rated as the most powerful.

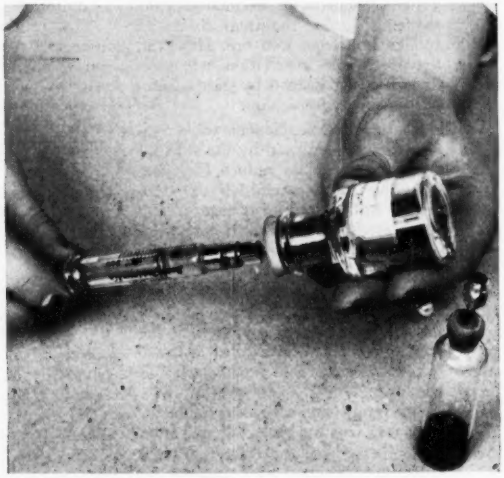
•

Less Corrosion: The life of jets handling 8% sulfuric acid at 160 F. for R. C. Mahon Co. has been increased over 600%. This longer life has been attained by substitution of Carpenter's stainless No. 20 for 18-8.

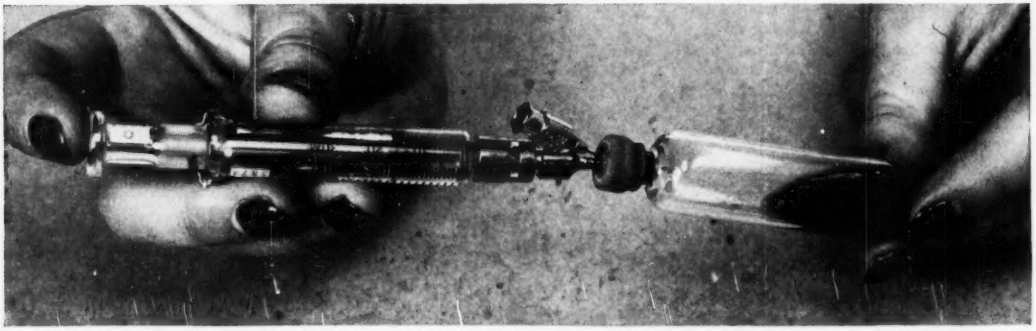
ANALYST "mass-produces" serum bottles containing accurately determined amounts of sodium hydroxide and hydrochloric acid.

ELECTROMETRIC TITRATIONS can be performed in the bottles. The electrodes are inserted through the rubber seal.

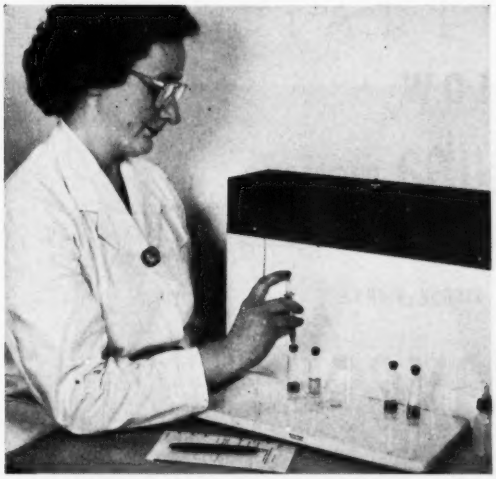
1 TIME 0′ 00″: Plant technician brings in sample of product for which an acid number is required. Analyst records job.



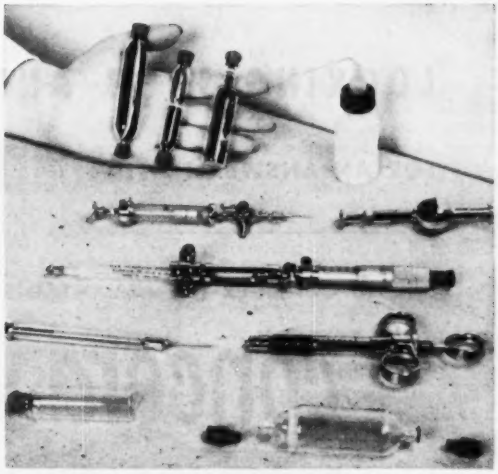
2 TIME 0′ 30″: Analyst draws necessary quantity of sample into hypodermic syringe.



3 TIME 1′ 30″: Sample is added to serum bottle containing caustic and indicator until end-point is reached. Don Smith, who devised technique, made studies of indicator stability in contact for long periods with caustic.



COLORIMETRIC measurements can also be carried out with ease—another example of the method's versatility.



VARIATIONS of the standard bottle are useful for gas scrubbing, centrifuging, specific gravity checks, and other operations.

"Mass-Produced" Analyses Cut Man-Hours

Space, time, equipment and chemicals are four expensive items cut down by Du Pont's new analytical technique, now in the development stage in the research laboratories of the Polychemicals Department. It is now being used at various semiworks locations to analyze nylon intermediates, antifreeze, agricultural chemicals and various research samples. The company expects that the technique will eventually be used for on-the-spot checks at various production locations.

Basic tools of the new approach are rubber-sealed serum bottles, a hypodermic syringe and needles, and a fast-weighing analytical balance. Analyses can be carried out on samples of only a few milligrams. And since solutions are injected through the rubber seals by means of hypodermic syringes, contamination and exposure to air are effectively eliminated.

Bottles containing an accurately determined amount of reagent sufficient for a single analysis can be prepared beforehand. Sample is injected until the end-point is reached, and weight of the bottle before and after shows how much material was added. Choice of appropriate reagents permits determination of acid number, saponification number, hydroxyl, water, carbonyl, or other groups.

In the past, more emphasis has been placed on reactions and reagents than on types of apparatus best suited for analysis. Hypodermic equipment has been used previously, but Du Pont's work marks the first attempt to systematize its use in analysis.

4 TIME 2' 00": Rapid-weighing balance makes quick work of determining how much sample was used.

5 TIME 4' 00": The weighing completed and calculations finished, analyst gives report to technician, who takes it to plant.

LOOKING HIGH AND LOW

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CONCORD WAX #190
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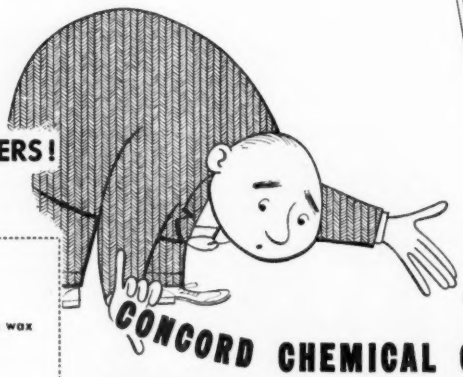

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TRADE-MARKED BRANDS: "Fair trade" prices are out.

Price Setting Upset

Supreme Court decision hits "fair trade" pricing, opens door to price cutting on drug, cosmetic and household specialty products.

Manufacturers study ways to avoid having trade named products "footballed" if price wars break out. Feared consequences: loss of retail outlets, lowering of product prestige, reduction of quality under pressure to cut price.

New law will be needed to restore fair trade to effectiveness, but that is unlikely.

When the Supreme Court ruled last week that a retailer need not honor "fair trade" prices if he has not entered into such an agreement with a manufacturer, the pricing system under which most drug and cosmetic products and many household chemical specialties are sold, lost its main prop. This action invalidated the non-signer clause which put teeth into the fair trade laws of 45 states*. Many of these provide for a state-wide fixed price for a product once a manufacturer and one retailer has reached agreement on a minimum price.

Authority for the non-signer provisions of the state statutes has been assumed to rest on the Miller-Tydings Enabling Act of 1937. This bill was passed by Congress (as a rider to a revenue bill) to amend the Sherman Anti-Trust Act by permitting price agreements between retailers and distributors. In its decision (involving a case of a retailer selling liquor below fair trade prices), the Court ruled that the intent of the Miller-Tydings Act was to permit voluntary agreements of this nature, and that holding a retailer to an agreement he did not sign—as is permitted by non-signer clauses—was not intended. Hence, a non-signer is free to sell a product at any price he wishes.

What's Left: The ruling does not in any way affect the right of manufacturers and retailers to agree on resale prices. And it does not affect non-signer provisions in state laws as they affect products in commerce within that state.

But the great majority of drug, cosmetic and household chemical specialties that have been fair traded are national brands. Their manufacturers obviously will be unable to operate effectively. At present, it is not clear what they may be able to do in the way of setting up independent agencies within states permitting fair trade pricing on the old basis. Some feel that such moves may be the answer, but it will probably take a test case to establish their legality.

The manufacturer does have one ace up his sleeve: He can always refuse to sell his products to a retailer who won't agree to minimum prices for them. Getting every retailer to sign price agreements, however, is a staggering clerical operation. In addition, keeping products out of the hands of non-signers calls for an almost impossible policing job.

But unless a manufacturer can keep his products out of price cutters' hands, his signed agreements will be pretty valueless. For example, if retailer A, close to retailer B, an outlet that has agreed to established prices, begins cutting, the manufacturer can do little else but release retailer B from the agreement. For he certainly will lose a cooperative outlet if he doesn't.

What's Feared: One of the most-repeated arguments for fair trade pricing is that it permits small retailers to compete with large chains. Small operations cannot do this normally, and in fair trade laws, small retailers feel they are protected from price competition from chains that can undersell them, or even resort to "price wars". A contrary argument is that such laws support inefficient distribution and management at the expense of the public.

From the manufacturer's viewpoint, it is advantageous to have as many distribution points for his product as he can. He also wants to protect the good name of his product, and to sell it at a price which permits him to insure quality, to continue to promote it widely, and to remove it from competition with cheaper—possibly inferior quality products.

Most producers in the drug and cosmetic industries, in particular, have considered an effective fair trade pricing system one of the best safeguards for these objectives. In the pre-fair trade period, many manufacturers found retailers unwilling to display, or even stock, a widely-sold item which was being cut in price by other outlets. This reluctance to han-

* Vermont, Texas, Missouri and Washington, D.C., do not have such laws.

dle such products not only weakened the manufacturer's distributional setup, but tended to put him at the mercy of price cutters in a given area. When price cutters became powerful enough, they were often able to force lower wholesale prices, and in many cases, manufacturers lowered the quality of their products proportionately.

Loss Leaders: Biggest fear of makers of well-known brands is the use of their products as "loss leaders". Retailers advertise these products at prices below cost to attract customers into the store, and then try to switch them to unknown brands that yield a larger margin of profit. Obviously this is taking a free ride on the good name of a product, the market for which has been developed and is maintained at considerable cost to the producer. Also, in the opinion of many manufacturers, it lowers the prestige of the trade-mark, puts it in a class with the cheaper product on which no money is spent for promotion. The extreme abuse of this selling technique is counterfeiting of products.

As yet, price cutting has not developed to any extent. Most producers are still studying the decision to determine what legal means they can take to keep their products out of the hands of price cutters. Retailers likewise are awaiting legal advice before they make any drastic moves.

Already one state—Connecticut—has announced that its fair trade law is rescinded by the Supreme Court decision. Congressional action will be necessary to restore fair trade to its former effectiveness. Both the Federal Trade Commission and the Department of Justice are opposed to such legislation, and it is doubtful that a bill of this nature will be passed soon.

VANCE AND MILLER: Adding to the family tree.

Clean Business

Kelite Products is readying a new metal-treating compound for addition to its growing line of nationally-distributed cleaning compounds. High industrial activity has meant an upswing in sales, but this Los Angeles manufacturer attributes most of its success to product development and a specialized sales force.

Sales engineers for Kelite Products, Inc.—200 of them—will shortly be bustling into metal processing plants across the nation with the latest addition to the company's line of nearly 150 chemical compounds for cleaning, sterilizing, deodorizing and for treating metal surfaces. Whether the surface be sheet steel or a stew pot in a cafeteria kitchen, Kelite has a chemical compound to treat it, make it last longer or insure its cleanliness.

Newcomer to the lines is tentatively named Key-Kote, and while chief research chemist Darriel Miller isn't revealing what's in the product of nearly four years' work, he's enthusiastic about its capabilities. It is designed as a short-term protective and phosphat-

izing compound to ready metal surfaces fo rthe next processing step.

In the Family: Key-Kote is a second cousin to Poly-Kote, introduced last year. Both are used for treating iron, steel and aluminum preparatory to painting. Both are rust inhibitors and both phosphatize metal surfaces. Poly-Kote operates at a low pH of O to 1; Key-Kote will operate at a 3-4 pH. Both give a phosphatized surface of 150-500 mg per sq ft.

Poly-Kote, a liquid, requires a stainless steel container. New Key-Kote, a powder, can be stored in black iron and will come in a 500-lb drum. A working solution of Key-Kote is made by adding 1 or 2 oz of the powder to 1 gal of water. Metal surfaces may be immersed in the solution or sprayed with it at 160-170 F.

Family Geneology: Kelite nailed up its shingle back in 1937 when financier-businessman L. C. Sorensen, the company's president, began to dabble in chemical compounds. Today, Kelite's three compounding plants are located in Los Angeles, Chicago and Mineola, N.Y.

The Los Angeles plant is home office and site of the chief research lab. Pilot labs, however, are located at each of the other plants. All plants turn out the entire line of cleaning compounds—for such industrial consumers as laundries, car washing stations, airplane maintenance establishments and restaurants as well as metal processors—but to the L.A. facility falls the task of partly formulating some of the more critical materials requiring special handling equipment.

Kelite reaches into many an unrelated field. Its Ke-cide, for instance, is a stable, strong quaternary ammonium compound with a phenol coefficient of 27.0—a teaspoon to a gallon of water equals 200 ppm. It's a germicide used for sterilizing everything from dishes and work utensils to cow's udders and dairy equipment.

No Stutterers Here: Chief chemist Don Vance, a Stanford graduate, developed Poly-Kote, while Miller's labors resulted in its close relative, Key-Kote.

T. Rawlings, sales promotion manager for Kelite, views the growing list of compounds with a banker's eye. "Business is way up," he purrs contentedly. One reason he gives for the upswing in sales: Kelite hires its own sales force, has no distributors in this country, factory-trains every one of its technical service engineers.

One thing is sure, Kelite can never risk hiring a stutterer—not with a line of products with names like Kelite Keshine, Kelite Kerey, and Ke-cide.

Advice from Industry

Industry Advisory Committees from various segments of the chemical specialties field reported on current supply conditions in recent meetings with the National Production Authority, and recommended means of alleviating shortages that exist.

Insecticides: There is presently no great difficulty in getting most of the required raw materials for household, industrial and dairy insecticides but some items are in short supply. DDT production is at a rate which, if maintained, will mean output of 92 million pounds in 1951. Pyrethrum, however, is a different story. Not only have pyrethrum flower imports been declining steadily, but following the ban on DDT for use in livestock sprays, demand for pyrethrum for that purpose has increased.

Allethrin, the synthetic substitute for pyrethrum, is not yet being produced on a large scale, and most of it is currently going for military requirements. Industry suggested that the civilian shortage of pyrethrum could be alleviated if defense agencies released some of their pyrethrum stocks and substituted allethrin for use in aerosol insecticides.

The shortage of Freon propellents for aerosols is becoming acute. Also aerosol containers are scarce primarily because of lack of materials for valves rather than because of scarcity of metals for cans.

Waxes: Waxes and polishes industry members want NPA to encourage production of domestic waxes to lessen their dependence on imports of carnauba which can be cut off in case of war. They specifically recommended NPA aid for a West Coast montan wax producer in securing sulfuric acid, sodium bichromate and other raw materials for his operation; and Government assistance in getting steel for sugar cane wax plant expansion.

Disinfectants: Substitute materials as well as regular raw materials are becoming increasingly scarce in the disinfectants and sanitizers industry. Competition from other industrial uses has left only 30-40% of pine oil production available for the industry's products. Cresylic acid is critically short with more and more of domestic production going into plastics, and imported material rising in price.

Within six months, the industry feels that synthetic phenol, to which many producers are turning because of shortages of standard materials, will also be difficult to get. Polyethylene for drum linings is also in short supply.

SPECIALTIES . . . . . .

Johnson Doings: Ground has been broken for a new wax manufacturing building in Racine, Wis. for S. C. Johnson. New products and increased production of old numbers have made the expansion necessary. It will be a three-story structure, is scheduled for completion next January.

Production capacity for Johnson's Carnu has been boosted from average daily output of 4,200 gallons to 8,000 gallons through the installation of new equipment. This new machinery for increasing the effciency of manufacturing operations has been installed in an existing building, but it will be moved into the new addition when it is completed.

On the marketing side, the company has just begun to package its Heavy-Duty Cleaner for cars in a retail size. A pint of the cleaner, previously available only in gallons for use by service stations and garages, will sell at 69¢.

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Still Expanding: Oklahoma City, Okla. is another location where a bleach manufacturing unit is under construction in the expansion program of Clorox Chemical Co. Other units are going up at North Kansas City, Mo. and Charlotte, N.C.

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Sealing Compound: A barrier against chemicals of high solvency is being offered by Highside Chemicals (Clifton, N. J.) which has developed a new joint sealing compound called Leak Lock. Formulated of a special plastic base, the sealant remains flexible enough to permit easy disassembly. It is recommended for threaded joints, flanged surfaces and tank interiors, to contain "sneaky" chemicals—various hydrocarbons and aromatics, including halogenated types—as well as substances of lesser solvency.

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Marked Drums: The agricultural chemicals industry is undertaking to mark all drums used for 2,4-D and 2,4,5-T weed killers with a distinctive stripe of purple between the chimes to prevent their accidental re-use for other agricultural chemicals. This is in line with recommendations made at the National Agricultural Chemicals Association spring meeting.

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New Producer: Crown Chemical Corp., a new chemical manufacturer with a plant in Providence, R.I., is turning out a line of textile chemicals.

•

Wider Fields: Corrosanti, an anti-corrosive for use in boilers and in other applications where rusting of metal is a problem, will now be nationally distributed by Adolph Schror, research laboratory (East Orange, N.J.). It has been tested in a limited area.

•

Good Customer: Florida was a good customer of manufacturers of fertilizers and other plant foods and insecticides last year. Its Chamber of Commerce has just reported that farmers there paid about $50 million for fertilizers and other soil-building materials, and an estimated $14 million for insecticidal sprays and dusts in 1950.

•

Non-Slip Waxes: Three formulations of slip-resistant waxes containing Ludox, du Pont's colloidal silica, are now being offered by Fuld Brothers (Baltimore). They are Formula P.G.L., a carnauba-base product that is easy to remove; Formula W.R.L., also containing a carnauba base, but water-resistant and harder to remove than P.G.L.; and Formula P.S.P.L. Price per gallon in 55-gal drums (3 or more) is $1.25, $1.28 and $1.02, respectively. All are self-polishing, have been accepted by Underwriters Labs as anti-slip.

•

Plant Increase: Seidlitz Paint and Varnish Co. is constructing a 2-story and basement addition to its Kansas City plant that will increase production capacity 50% and double storage and shipping space. Equipment to be installed will permit complete mechanization of manufacturing operations from raw materials to finished products. It is expected to be ready by September.

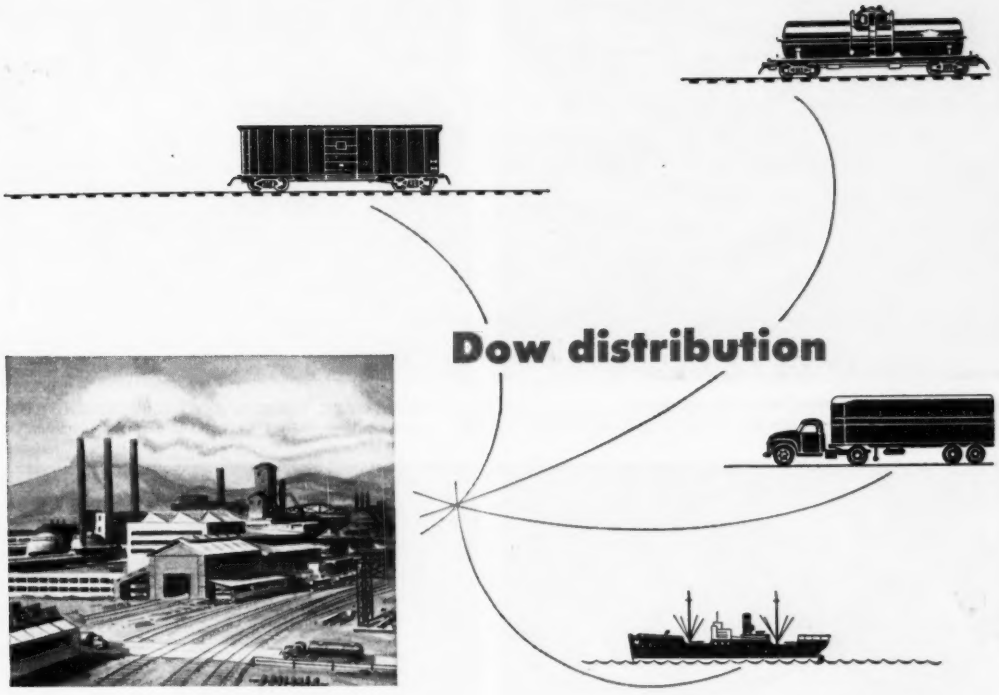
The addition has been made principally for the company's new line which comprises white paints and enamels that are sold to outlets with tints for mixing in desired shades at the time of sale.

•

Food Colors: Sterwin Chemicals has introduced a new standard line of secondary blends of certified food colors to supplement its line of 18 primary food colors. They are packaged in 1-,5- and 25-lb metal containers, but can be custom packed in smaller sizes

•

New Quarters: Increased production and new products are in the offing for Shuman Chemical Products, which has just moved into a new building in Cedar Grove, N.J. The company makes specialty pigments, cellulose acetate-based coatings, adhesives, rust preventives and other specialties.



keeps your production steady!

Dow caustic soda deliveries are set up with an eye on *your* production schedules.

For this reason, Dow maintains an outstanding network of distribution. Dow has caustic soda plants in Michigan, Texas and California. Besides shipping from these plants, Dow distributes Caustic Soda Solution from bulk tank terminals in Carteret, New Jersey and Charleston, South Carolina. Dow also distributes Caustic Soda Solid, Flake and Ground Flake from Chicago, Illinois, Port Newark, New Jersey and Charleston, South Carolina.

Dow's distribution facilities offer you constantly dependable deliveries to assure maintenance of *your* production schedules. Take advantage of them.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Atlanta • Cleveland • Detroit • Chicago • St. Louis • Houston
San Francisco • Los Angeles • Seattle

Dow Chemical of Canada, Limited, Toronto, Canada

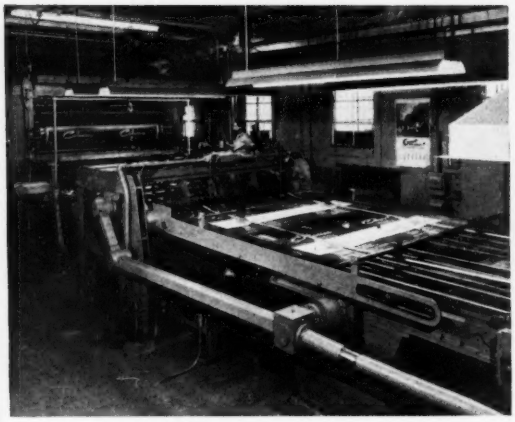
wherever you are... you're close to

DOW CAUSTIC SODA

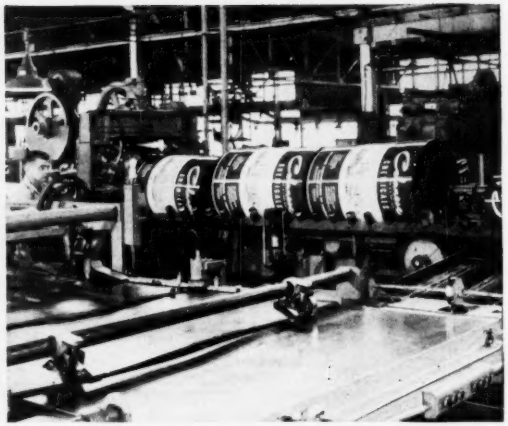
DOW

CHEMICALS

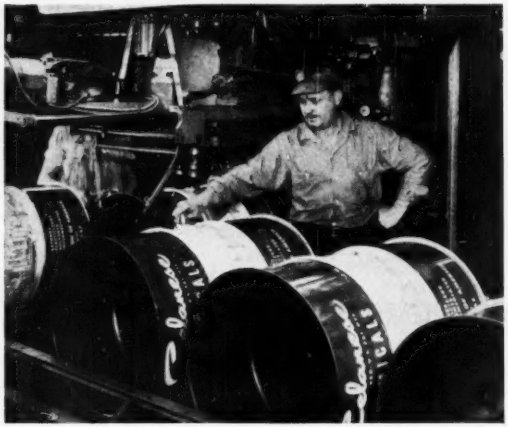
INDISPENSABLE TO INDUSTRY AND AGRICULTURE



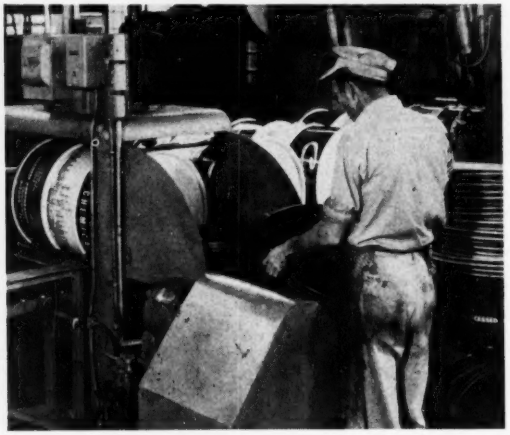
1 STEEL DRUM SHEETS roll off lithograph press. Next steps will be coating with thin film of lacquer, drying in oven.



2 SHEETS ARE FORMED INTO OPEN-END CYLINDER; seams will be welded by automatic resistant welder.



5 AUTOMATIC PRESS IS USED TO INSERT the 2 in. body opening; operator screws in plug manually.



6 HEADS ARE INSERTED INTO DRUMS, and given light friction fit in head press at center.

PACKAGING . . . . . .

Celanese Products in Technicolor Drums

This week, Celanese customers are receiving the first shipments of products packaged in the company's new, lithographed, 55-gal. drum. The fancy package has long been recognized as a potent sales weapon. Celanese, however, is one of the first companies to take advantage of a Rheem Manufacturing Co. process for shipping bulk chemicals.

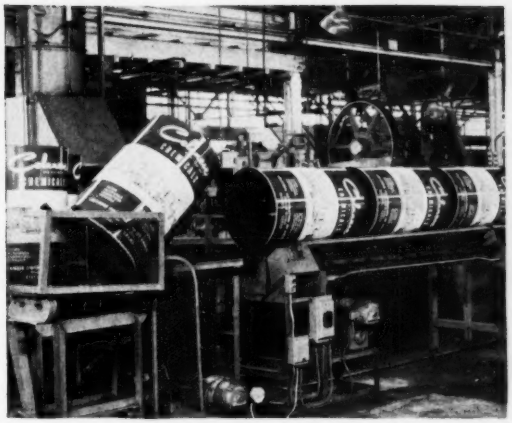
The process (called Rheemcote) enables heavy-gauge steel sheets to be lithographed. Relatively inexpensive (adds 17¢ to the cost of an unadorned drum), it turns out packages with eye appeal—and sales appeal.

Rheemcote: The process starts with running clean, heavy-gauge steel sheets through a coating machine that covers one side with white enamel. The coating is baked in a tunnel drier and the sheets returned to the starting point.

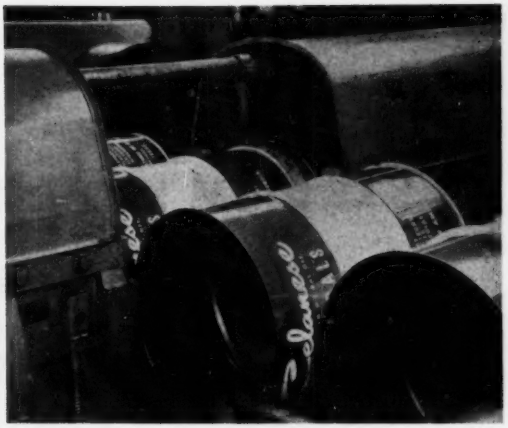
For products that are corrosive and hard to contain, and for those requiring very clean interiors, lacquers can be applied to the inside of the drum.

Next the sheets are fed to the lithographing press, where colored illustrations or trade marks are reproduced—accurate in detail. White enamel in the coating machine is replaced by a clear lacquer, and the lacquer applied to the decorated surface.

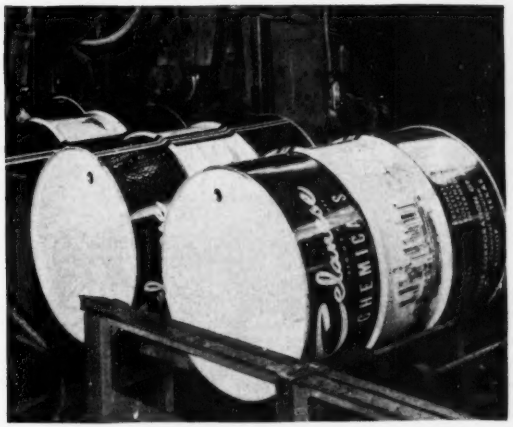
After the sheets have been printed and coated, they are picked up by a conveyor and once again transported through the long tunnel drier. The drier operates at controlled temperatures, is sectioned for pre-heating, baking and cooling. The baked sheets are then ready for welding and the fabricating line.



3 WELDED CYLINDERS are "up-ended," fed into fabricating line. They will be "down-ended," sent through flanger.

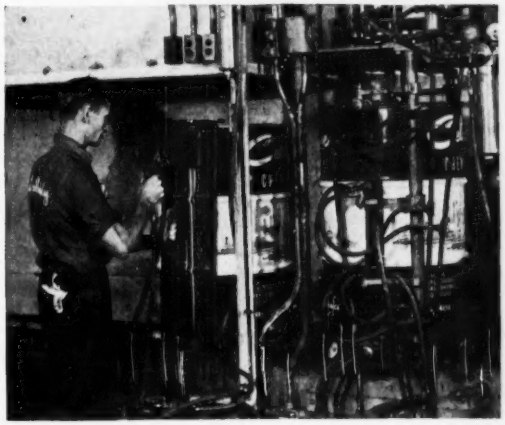


4 ROLLING HOOPS are expanded (swedged) into sides. Rubber-faced rings do the job without damage to finish.



7 DOUBLE SEAMER has curled edge of head over drum shell flange, then curled that seam over into air-tight, double seam.

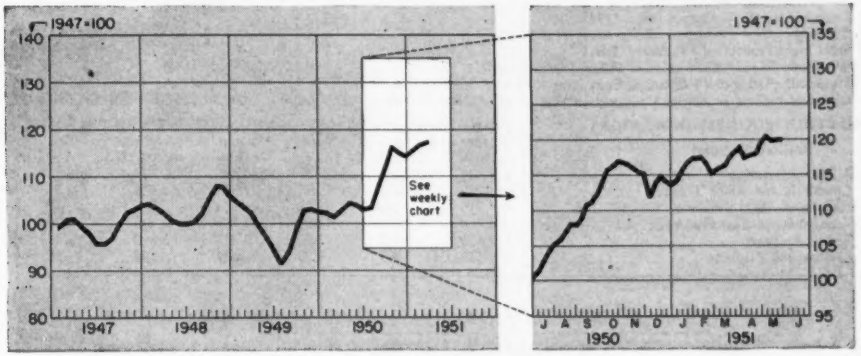
8 OPERATOR TESTS SEAMS by running jet of water down sides of drums into which compressed air has been pumped.



9 NEXT OPERATOR touches up side seam with paint. Machine retouches top and bottom edge of rotating drum.

10 FINISHED DRUMS are inspected (left); line (right) conveys them to waiting box cars for shipment to customer.

CHEMICAL MARKETS....



CHEMICAL INDUSTRIES OUTPUT INDEX — Basis: Total Man-Hours Worked in Selected Chemical Industries

A widespread trend in supply improvement emerged this week as production held up well, imports continued to increase, and new export quotas helped curb the drain on several vitally-needed chemical materials.

Chemical output as measured by the CW index has reached a plateau around the 120 niche (1947=100) for the time being. Latest government figures (April) show that chemical sales still slightly exceeded rise in inventory, but this condition may not be true in today's fast-changing market.

The Office of International Trade is moving to conserve more chemicals that are either short or expected to get that way. Customary heavy exports of carbon black have been cut back this week, as stockpiles have melted away to less than a month's production under the pressure of consumer demand.

Restrictions on naval stores by OIT remain in effect, but terpene hydrocarbon exports have doubled. While a restive naval stores industry awaited OPS guidance out of the price-maze, prices of pine gum averaged $1.11 a barrel less than a week before. One factor: paint consumer buying resistance.

Right now there is a temporary lull in imports for a special reason: Many purchasing agents, eyeing Torquay tariff concessions effective in June, are holding off buying chemicals they can do without for a short time. But most of them pass up the savings if inventories are low on a scarce item needed for production.

Imports of urea, phosphates, tri-and perchlorethylene strengthened the buyer's position for those commodities. Urea is moving at around 10¢ a pound, down a cent from the week before. Tri-sodium phosphate lacks support, having skidded from 13¢ to 6½¢ in a few weeks. Chlorinated ethylenes were unchanged in price, but demand was nominal.

Sellers of solvents and phthalate plasticizers are encountering some indifference at present prices. Fermentation butyl alcohol and butyl acetate are not arousing strong buying interests, despite the recent 7¢ a pound decline. Plastics demand for acetone is steady at 9-10¢ in tankcars, and military uses for gunpowder are expected to tighten the available supply.

MARKET LETTER

MARKET LETTER

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
Chemical Industries Output Index (1947=100)	120.1	120.3	103.6
Bituminous Coal Production (Daily Average, 1000 Tons)	1,603.0	1,618.0	1,684.0
Steel Ingot Production (Thousand Tons)	2,071.0	2,077.0	1,941.0
Wholesale Prices—Chemicals and Allied Products (1926=100)	144.1	144.4	116.5
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	233.9	246.4	191.3
Chemical Process Industries Construction Awards (Eng. News-Record)	$9,006,000	$1,023,000	$11,320,000

MONTHLY BUSINESS INDICATORS (Million Dollars)	MANUFACTURER'S SALES Latest Month	Preceding Month	Year Ago	MANUFACTURER'S INVENTORIES Latest Month	Preceding Month	Year Ago
All Manufacturing	$23,441	$22,666	$17,797	$36,396	$35,488	$29,073
Chemicals and Allied Products	1,729	1,631	1,250	2,514	2,424	1,978
Paper and Allied Products	715	686	510	828	791	703
Petroleum and Coal Products	1,808	1,795	1,550	2,165	2,133	2,049
Textile Products	1,423	1,407	963	3,127	3,046	2,042
Leather and Products	331	365	285	621	598	509

Although phthalate supplies have improved, phthalic anhydride is actually harder to get than it has been for several weeks. One buyer put out a firm offer to buy 50,000 pounds at 73½¢ a pound. This is several cents above recent top bids, and almost out of sight of OPS-fixed manufacturers' prices of 21¢.

The improvement in phthalate plasticizers does not extend to other kinds. Tricresyl phosphate offers are less frequent, even with frantic bidding at 55-60¢ per pound, well above manufacturers' selling price of 37-38¢.

Whether supplies improve depends on stepping up imports of cresylic acid, and making more chlorine available for the key intermediate, phosphorus oxychloride.

Many inorganic chemicals show similar conflicting trends. Although most are generally improved in supply, a few are harder to locate, and/or more expensive. Two conspicuous examples—sodium cyanide and copper sulfate.

The cyanide scramble is due to mounting demand for case-hardening metals, plus greater export flow. Current resale at 35¢ a pound is exactly double what manufacturers quote.

Copper sulfate, to the non-contract user, is practically non-existent. Those who can get it are paying 14½¢ a pound, up 2¢ from last week. No relief is in sight because of deep-seated shortages in sulfuric acid and copper.

ECA needs plus exports are keeping antibiotics markets active. A quarter-million dollar order for Yugoslavia has already been authorized, and an additional three-quarter million dollar request is awaiting action by ECA.

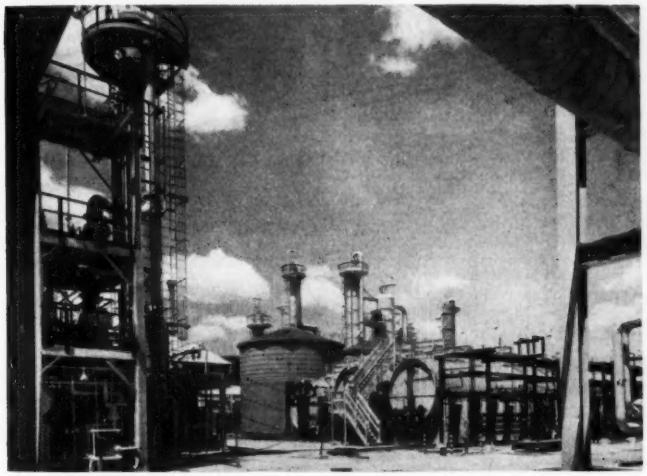
Better days are in store for users of citric and tartaric acid, despite robust seasonal demand. Imports from Spain and Portugal chipped 4¢ a pound from the tartaric price, now 54¢.

Resale citric acid prices are still around the 60¢ mark, but fluctuating. Due soon—a supply ease from Pfizer's new capacity.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending May 28, 1951

	Change	New Price		Change	New Price
UP					
Carnauba Wax, No. 1 Yellow	$ .01	$1.32			
DOWN					
Copra, ton, Pac. ports	10.00	187.00	Tung Oil, tanks	.0025	.395
Quicksilver, 76 lb. flask	2.00	211.00	Rosin, gum, Savannah, WW, cwt.	.35	9.15

All prices per lb. unless quantity is stated



SHELL'S SYNTHETIC GLYCERINE: Soapers pay heed as . . .

Synthetic Moves In Drums

Shell Chemical starts to ship synthetic glycerine in drums, moves into a wider market.

Prices in drums are boosted 11¢ a pound, but shipments now are on freight paid basis.

Glycerine supplies will get worse in latter 1951, but improvement due in early 1952.

For the first time anywhere, drums of synthetic glycerine will soon be moving in quantity from the Shell Chemical Corp. plant at Houston, Texas. An increase in price of 11¢ a pound, recently effected for drum sales, put drum buying on a freight-delivered, instead of the former f. o. b. plant basis. The entry of synthetic glycerine into the diversified ranks of the small users is still in embryonic stage and probably won't affect the glycerine market for some time—at least until supplies flow more freely.

As an augury of things that may come, the small trickle now moving out of the Shell plant as drum shipments gives proof positive that ambitious plans are in store for this petroleum-derived product. But to make any headway, it will be bucking strong and established competition from by-product soap glycerine, that has been alternately boon and bane to soap producers.

Actually, the great preponderance of Shell's production has been committed on large-volume contract. As long as the current market pinch obtains, and until other marketing problems can be overcome, most of the production will continue to be sold to a few major outlets. But in moving into a market of wider horizons, Shell's astute sales management is not overlooking the lucrative potentialities in selling to many small processors of surface coatings, cosmetics, and for the myriad small-scale uses to which glycerine can be applied.

Considering the fact that practically no synthetic glycerine has been drum-sold before, the price boost in these containers is actually a price policy realignment preparatory to moving in on more extensive customer coverage. A vigilant Office of Price Stabilization apparently permits a change of this kind since no prior ceiling is applicable to the new style container marketing.

Soap-made: The implications of the Shell move are not lost upon veteran U. S. soap producers, who even now make more than 80% of all glycerine in this country. Last year's production of 225 million pounds include only about 36 million pounds of the synthetic. For the soap-derived product to maintain this 4:1 ratio, a flourishing demand for soap is a must. But in the past decade, soap-makers have seen (and weathered) some mighty drastic changes, and undoubtedly expect more.

During World War II, shortages of fats and oils curbed production of soap and glycerine, and the Office of Price Administration tried to keep a low ceiling price in effect, with indifferent success as black marketers reaped the profits. Following the war, came a period of erratically soaring prices on fats. These had a counterpart in the stratospheric soap prices of 1947 and 1948, with glycerine prices swept along in the vortex of unsatisfied demand. Prices doubled in the two years, 1946 to 1948.

By the end of 1948, synthetics made their opening bid on two major fronts. The meteoric rise of synthetic detergents, supplanting many established soap outlets made substantial inroads on the growth rate of soap usage. The other factor, of course, was the commercial development of synthetic glycerine derived from propylene by chlorination. These concurrent events, although presenting a strong competitive prospect for the soap producers, actually had some immediate beneficial results for the soap industry by stimulating an improvement in process technology and the development of expanded uses for glycerine. To the consumer, the benefits have been no less evident because of the opportunity of obtaining superior products, and the stabilizing influence of synthetic glycerine on supplies and prices.

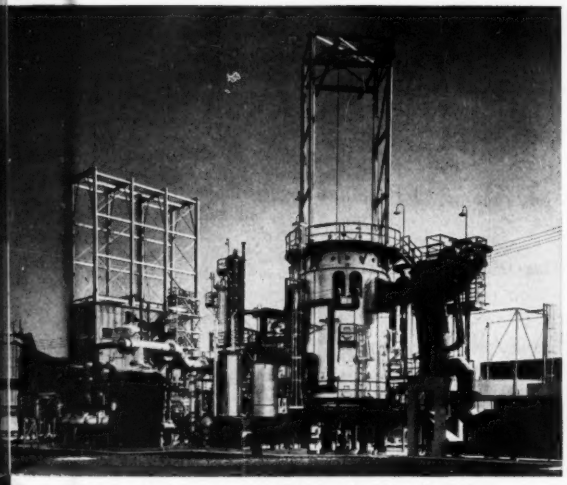
New Values: In 1949 and 1950 (until Korea) the glycerine price dropped well below post-war peaks. This downward price trend was due to larger supplies of glycerine, availability of other polyhydroxy alcohols, and the steadying effect of synthetic on speculative buying.

With the outbreak of Korean hostilities, and defense mobilization in the offing, the buying stampede was on like bargain-day in women's nylons. Under the three-fold urging of use, stockpiling, and speculation, glycerine prices tripled in six months. The bait of higher prices lured record imports in the last quarter of 1950, 8 million pounds passing customs in November and December.

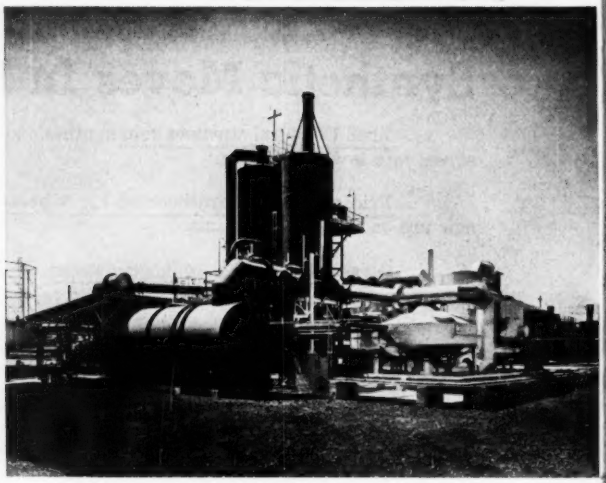
Current nominal quotation on glycerine in drums is around 55-60¢ a

New Fertilizer Plant in MEXICO now in operation

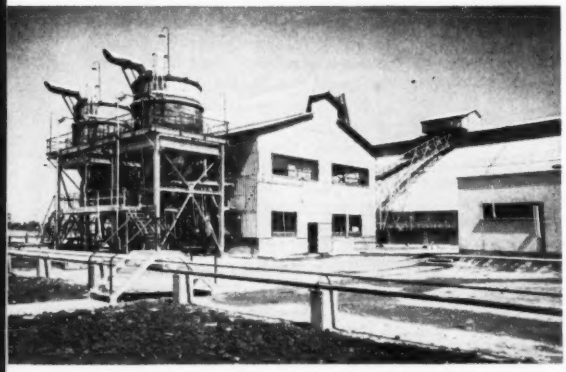
COMPLETED BY CHEMICO



Hydrogen from natural gas and nitrogen from the air are combined in proper proportions under pressure to form ammonia.



Sulfur, removed as an impurity from the natural gas, becomes the raw material for the manufacture of sulfuric acid.



This ammonia and sulfuric acid are combined to produce 70,000 tons of ammonium sulfate per year.

CHEMICAL CONSTRUCTION CORPORATION

A UNIT OF AMERICAN CYANAMID COMPANY

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pound, but resale prices are in the 80-85¢ range, with no signs of abating demand. Shell is now quoting 54½¢ a pound, delivered, in drums.

Supply Lines: Barring unforeseen sudden demand for military purposes, stocks of glycerine are in better shape than at any time since last fall. Stockpile inventory is a little over 65 million pounds, highest for more than a year, and usually considered a safe margin for peacetime requirements.

Imports are holding up strongly, 7 million pounds arriving in the first quarter this year, compared to five in the same period last year.

Several sources close to the overall glycerine picture figure that output of by-product glycerine will drop this summer. Soap inventories are already high, and glycerine production waits on soap demand. Another seasonal influence in the expected downturn is the usual summer shutdown observed by most of the soapers.

It seems very likely, then, that glycerine supplies will tighten in the next few months. Increased capacity by Shell for synthetic glycerine, previously scheduled to go on stream by mid-summer, will not get into operation before the first quarter of 1952. Reason: hard-to-get priorities on nickel, needed for chlorination and evaporation equipment.

Long-range: If glycerine consumers can hold out this year, prospects are not unfavorable for a bettering supply as long as the national economy is geared to civilian needs. Imports should bolster the stockpile by something close to last year's total of 22.5 million pounds, with additional supplies due to arrive from South America and Cuba to make up for the 4 million pounds that formerly came from Iron Curtain countries.

For the long pull, synthetic glycerine is almost certain to play a bigger role in glycerine supplies. Further growth of synthetic detergents relative to soap will curb, in some degree, the production of by-product glycerine.

More chlorine capacity in the next two years will provide the raw material basis for making more synthetic glycerine. All these factors contribute to the probable success of Shell's move in extending their market coverage.

GOVERNMENT NEEDS

Bids Close	Inv. No.	Quantity	Item
New York Quartermaster Procurement Agency, 111 E. 16 St.:			
June 13	51-1259	39,985 gals.	wood preservative (concentate, pentachlorophenol, 55-gal. drums)
Veterans Administration (Chief, Procurement Div.), Washington 25, D.C.:			
June 4	A-96	various amounts	pharmaceuticals, including ascobic acid, thyroid tablets, seconal sodium capsules, and hexavitamin capsules.
Aviation Supply Office, 700 Robbins Ave., Philadelphia, Pa.:			
June 6	B-54090	167,000 gals.	exterior oil paint, ready mixed
Navy Purchasing Office, 111 E. 16 St., New York, N.Y.:			
June 11	8931	1,300 gals.	duplicating liquid
June 15	8932	7,000 gals.	ethyl alcohol
General Services Administration, 250 Hudson St., New York, N.Y.:			
June 4	NY-2H-29170	480 each	liquid floor wax
June 4	NY-2H-29170	12,420 lbs.	paste semisolid floor wax
June 4	NY-2H-29170	6,300 gals.	water emulsion floor wax
June 4	NY-1S-29054	11,360 lbs.	mimeograph ink
June 6	NY-2H-29252	905 gals.	primer paint
General Services Administration, Region 3, Washington 25, D.C.:			
June 8	3-M100533	2,400 each	DDT aerosol insecticide bombs

GOVERNMENT AWARDS*

Item	Supplier	Location
Navy Purchasing Office, New York, N.Y.:		
Sodium Metasilicate	Diamond Alkali Co. of Calif.	Emeryville, Calif.
insecticide	Kolker Chemical Works	Newark, N.J.
Picatinny Arsenal, Dover, N.J.:		
glycerin, grade B	Shell Chemical Corp.	New York, N. Y.
Aviation Supply Office, Philadelphia 11, Pa.:		
enamel, various kinds	Andrew Brown Co.	Los Angeles 22, Calif.
enamel, various kinds	Rockford Paint Mfg. Co	Rockford, Ill.
enamel, various kinds	Pacific Paint & Varnish Co.	Berkely 10, Calif.
enamel, various kinds	Chilton Paint Co.	College Point, N.Y.
enamel, various kinds	Frey-Yerking Paint Co.	Columbus, Ohio
enamel, various kinds	Anthony Mfg. Co.	Kansas City, Mo.
paint, interior	Jaegle Paint & Varnish Co.	Philadelphia, Pa.
paint, interior	The Glidden Co.	San Francisco, Calif.
exterior drum coating, rust-inhibiting enamel	Pur-All Paint Products Co.	Bronx, N.Y.
boiler compound	C. G. Whitlock Chemical Co.	Springfield, Ill.
varnish, thinner, lacquer	Reliance Varnish Co.	Louisville, Ky.
synthetic enamel thinner	George Senn, Inc.	Philadelphia, Pa.
phenol (carbolic acid)	The Dow Chemical Co.	Midland, Mich.

* Security regulations prevent disclosure of quantity and dollar volume.

BOOKS . . . . . .

Medicinal Chemistry, Vol I, by Alfred Burger. Interscience Publishers, Inc., New York, N. Y.; xviii+577 pp., $10.

As a survey of the various phases in the field of medicinal chemistry, this treatise—the first volume of two—is concerned with the chemistry, biochemistry, and therapeutic and pharmacological action of natural and synthetic drugs. The author reviews advances made in medicinal chemistry, outlines current ideas and hypothesis and tries to indicate in just what direction the greatest need for research lies. Throughout the book emphasis is on the chemical aspects, since the best research results in the science have come by way of biochemistry.

The Fischer-Tropsch and Related Syntheses, by Henry H. Storch, Norma Golumbic and Robert B. Anderson. John Wiley & Sons, Inc., New York, N. Y.; xii+610 pp., $9.

For those engaged in research and development work related to fuels and chemical synthesis, this volume provides a practical and critical review of large masses of scientific and engineering data, a large portion of which resulted from the wartime study of German technology. The major section of the book is devoted to the selective catalytic hydrogenation of carbon monoxide for the production of aliphatic organic compounds. Also included is a summary of theoretical and applied contact catalysis.

The Chemical Analysis of Foods and Food Products, 2nd edition, by Morris B. Jacobs. D. Van Nostrand Co., Inc., New York, N. Y.; xxi+902 pp., $9.

Retaining the fundamental matter of the first edition, this volume systematically covers the analytical methods of the food chemist but has been revised to keep pace with the various new lines of application where chemical analysis of foods has become important. It is written as an educational text and manual for manufacturers concerned with control work—in both governmental and commercial laboratories.

Adsorption, 2nd edition, by C. L. Mantell. McGraw-Hill Book Co., New York, N. Y.; viii+634 pp., $9.

Like its predecessor, this edition correlates the practical, commercial and engineering aspects of industrial adsorption, including only a minimum of theoretical matter. In this volume the author has included important developments in the field during the last six years such as in the fractionation of liquids, gases and ions and the subsequent new industrial processes and applications that have resulted.

The Chemistry of Hydrazine, by L. F. Audrieth and Betty Ackerson Ogg. John Wiley & Sons, Inc., New York, N. Y.; xii+244 pp., $5.

With a possible future as a fuel for rockets and jets, as an explosive, reducing agent or basic chemical commodity, hydrazine, a hydronitrogen has come of age; and the authors review the extensive research which has opened up these potentialities. Systemized information is provided on the explosive characteristics, reducing properties and inorganic derivatives of this compound in addition to a discussion on the methods of its formulation and preparation.

Briefly Listed

VISCOSITY AND PLASTICITY, by E. N. Da C. Andrade, 84-p book, comprises three lectures on the phenomena of viscosity and plasticity; the three main topics are the nature and theory of liquid viscosity, flow of simple liquids, suspensions, and gels and lastly, the flow of solids. Published by The Chemical Publishing Co., Inc., 212 Fifth Ave., New York 10, N.Y. at $2.25 per copy.

INDUSTRIAL VENTILATION, a new periodical directed toward the chemical and metallurgical industries and dealing with latest developments in industrial and fume control. Published by American Wheelabrator & Equipment Corp., Mishawaka, Ind.

LIGHTING AND THE NATION'S WELFARE, 24-page report summarizing the present-day services of illumination in the spheres of American industrial production, public safety, research and education, offices and outdoor work or play areas. From the National Information Committee on Lighting, 1410 Terminal Tower, Cleveland, Ohio; price; 25¢ per single copy, proportionally less for quantity orders.

GAS EXPLOSIONS AND THEIR PREVENTION, prepared by G. S. Scott, R. E. Kennedy, and M. G. Zabetakis explains precautions to be taken in minimizing hazard of gas explosions in industrial plants, for engineers and chemists with limited technical knowledge of this subject; discusses the flammability limits of various gases and vapors. Available from the Bureau of Mines, Publications Distribution Section, 4800 Forbes St., Pittsburgh, Pa.

MEETINGS . . .

Salesmen's Assn. of the Amer. Chem. Ind., annual meeting, Shawnee Inn., Shawnee-on-Delaware, Pa., June 8-9.

Amer. Leather Chemists Assn., Griswald Hotel, Groton, Conn., June 11-13.

Natl. Fertilizer Assn., annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., June 11-13.

Natl. Organic Chemistry Symposium, Shirley-Savoy Hotel, Denver, Colo., June 12-15.

Amer. Council of Comml. Laboratories, Ambassador Hotel, Los Angeles, Calif., June 14-15.

Mfg. Chemists Assn., annual meeting, joint outing with SOCMA, Greenbrier Hotel, White Sulphur Springs, W. Va., June 14-16.

Synth. Org. Chem. Mfrs. Assn., joint outing with MCA, Greenbrier Hotel, White Sulphur Springs, W. Va., June 14-16.

Amer. Plant Food Council, annual meeting, The Homestead, Hot Springs, Va., June 14-17.

Inst. of Food Technologists, annual meeting, Hotel New Yorker, New York, N.Y., June 17-20.

Canadian Gas Assn., annual convention, Bigwin Inn, Lake of Bays, Ontario, Canada, June 18-21.

Chem. Inst. of Canada, annual conf., Winnipeg, June 18-20.

Amer. Soc. for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, June 18-22.

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Formula 400	99-103	60-64	3.0 Max.	196.9-204.8	196.9-204.8	4.0/1.0
Formula 1000	99.0 Min.	58	6.0 Max.	196.9 Min.	196.9 Min.	35.0/5.0*
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6—Stainless Steel Kettles, 20#jkt., Vert. agitator—2700 gal. & 950 gal.
1—100 gal. Stainless Steel Type 347 Tank, 18" x 9', 250# pressure.
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Mail the coupon at the bottom of page. Circle page numbers of items about which you want more details. Then write your name and address and mail it to us. Your request will be forwarded to companies concerned, the answer coming direct to you.

MAKES IT HANDY

Products and literature in this issue are listed on these pages. There are three indexes. (1) Editorial items on new products, new equipment, new literature; (2) products advertised. (3) The index of advertisers is on the following page.

THE NUMBERS

Advertisements:—There is a page number on the coupon for each advertisement. Before the number, may appear, L, R. T. B (left, right, top, bottom), locating the ad on the page; small letters following (a,b,c) indicate additional products in the advertisement.

Editorial Items:—Numerals are page numbers; the ABC's distinguish among items where more than one is on a page. There is a number on the coupon for each item referring to new products, equipment, and literature.

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NEW PRODUCTS

NEW EQUIPMENT

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CHEMICALS

Equipment

General

PRODUCTS ADVERTISED

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Chemicals

Plasticizers

SEARCHLIGHT SECTION

(Classified Advertising)

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POSITION _____

COMPANY _____

ADDRESS _____

CITY & STATE _____

Editorial Items

20A	20D	23B	44B	44E	44H	44K
20B	21A	23C	44C	44F	44I	44L
20C	23A	44A	44D	44G	44J	44M

Advertisements

I	4	18	22	T23d	28b	29	34a	38	46a
1	14	20	T23a	B23	28c	T30a	34b	B40	46b
2	15	T21a	T23b	26	28d	T30b	34c	41	46c
3	17	T21b	T23c	28a	28e	31	34d	45	46d

Expires September 2, 1951

BOOKLETS . . . . . .

Chemicals

Cyanoacetamide

Technical data bulletin on cyanoacetamide, an organic intermediate, especially useful in the pharmaceutical field; written with a view to furthering long range development and research with this compound, information is given here on its properties, specifications, and suggested applications along with a synopsis of work reported in literature. Kay Fries Chemicals, Inc.

Special Chemicals

16-p. price list containing prices plus brief descriptions of commercial and potential uses of 74 items from the firm's special chemicals division, seven of which are new products; among items described are 22 varieties of amino acids, bulk pharmaceuticals, drug and dye intermediates, etc. Winthrop-Stearns, Inc.

Equipment

Centrifugals

22-p. illustrated booklet describing the firm's line of high-speed centrifugals to be used wherever filtering, separating or clarifying is required in the chemical and process industries; explains advantages, component parts, operating principles and specific application purpose of each model. Fletcher Works.

Chart Drives and Hubs

6-p. folder covering chart drives and accessories for recording meters and instruments, with data on the construction and operation of eight-day chart drives, both the standard and midget sizes, both of which are adapted to a variety of rotation speeds by means of turrets. Rockwell Mfg. Co.

Roller Mill

6-p. folder dealing with the construction features, dimensions and specifications of roller mill designed to afford better feed distribution and uniform pressure at the ends of the rolls—for use in a variety of grain, feed and chemical grinding jobs which require controlled and selective granulation. Allis-Chalmers Mfg. Co.

Strip Chart Recorder

4-p. bulletin discussing deflection type strip chart recorder — the "multipoint capacilog"—which provides up to six permanent records of industrial processes on one chart. Wheelco Instruments Co.

Turbo Dryer

6-p. bulletin covering the construction, applications and operating principle—gentle handling through repeated piling and spreading—of continuous transfer type vertical turbo dryer for fragile or heat-sensitive materials or also for corrosive, abrasive, caking or oxidizable materials. Wyssmont Co.

Analytical Balances

8-p. catalog outlining the construction, specifications, specific applications and price of various balances carried by the firm such as the precision analytical balance, specific gravity balance, hydrostatical balance, etc. Livingston Commercial Corp.

Flame Failure Safeguard

Bulletin reviewing new series of photoelectric flame failure safeguards and programming controls with photo-conductive cell which "sees" all types of flame-gas, oil, pulverized coal in order to give instant response to flame failure and protect against the hazard of explosion. Combustion Control Corp.

Electric Oil Heaters

4-p. bulletin describing electric oil heaters designed for heating heavy grades of fuel oil with automatic control of oil temperature; also gives information on the suction type heater and electric oil preheaters, presents explanation of operation method, chart of oil heating rates and usage recommendations. Hauck Mfg. Co.

Safety Relief Valves

Bulletin describing and illustrating safety relief valve assemblies developed for safeguarding larger hot water heater boilers from excessive pressure. McDonnell & Miller.

General

*Consultant Services

Thirteenth edition of "Consulting Services," 1951, 136-p. revised volume listing chemical consultants both alphabetically and by geographical location in addition to classifying various fields in which problems fall; main section consists of statements made by each member concerning his and his organization's qualifications and activities. Association of Consulting Chemists and Chemical Engineers, Inc.

Plant Protection

Manual revised in the light of the new atomic war threat, designed to solve plant protection problems by instituting security systems for preventing loss of life, damage to property and sabotage of war material. Detex Watchclock Corp.

Research Laboratory

14-p. booklet devoted to firm's research laboratory located in East St. Louis, Ill., which serves subsidiary concerned with the manufacture of industrial chemicals, principally the aluminas and fluorides; aim and scope of the research done there is explained as well as the nature of the products of research. Aluminum Co. of America.

* Request must be made to company on business letterhead.

ADVERTISER'S INDEX

BUSINESS STAFF

SALES MANAGER ..... Bayard E. Sawyer

BUSINESS MANAGER ..... Albert E. Weis

Atlanta 3 ..... Ralph C. Maultsby, 1311 Rhodes-Haverty Bldg., Atlanta

Chicago 11 .... Alfred D. Becker, Jr., Frank C. Mahnke, Jr., 520 N. Michigan Ave.

Cleveland 15 .... Vaughan K. Dissette, 1510 Hanna Bldg.

Dallas 1 ..... James Cash, First National Bank Bldg.

Los Angeles 17 .. Jos. H. Allen, H. L. Keeler, 1111 Wilshire Blvd.

New York 18 .... Knox Armstrong, Robert S. Muller, Charles L. Todaro, 330 West 42 St.

Philadelphia 3 .... William B. Hannum, Jr., Architects Bldg., 17th & Sansom Sts.

San Francisco 4 .... Ralph E. Dorland, John W. Otterson, 68 Post St.

Boston 16 ..... 1427 Statler Bldg.

Detroit 26 ..... 856 Penobscot Bldg.

Pittsburgh 22 ..... 738 Oliver Bldg.

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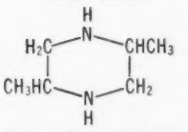
New Research Chemicals for your Future Products

BUTYL DIETHANOLAMINE

$CH_3CH_2CH_2CH_2N(CH_2CH_2OH)_2$

Boiling Range: 270-275°C.
Textile Chemical Intermediate

2,5-DIMETHYL PIPERAZINE



Melting Point: 115.5°C.
Pharmaceutical Intermediate

N-HYDROXYETHYL DIETHYLENE TRIAMINE

$H_2NC_2H_4NHC_2H_4NHC_2H_4OH$

(Contains about 20 per cent Dihydroxyethyl Diethylene Triamine)

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Pharmaceutical Intermediate

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